THE
RESOURCES OF UTAH,

WITH

STATISTICS OF PROGRESS

For the Year 1872.

Comprising a description of the Geographical position and Area of Territory, the Population, Climate, Soil, Agricultural Products, Value of Property, Mineral Resources, Mining Interests, Furnaces, Smelting Works, Stamp Mills, Separating and Refining Works, Ore Sampling Works, Railroads, Movements in Real Estate, Banks and Banking, Exports and Imports, including Merchandize, Ore, Bullion, Gold and Silver, Mechanical and Manufacturing Interests, Buildings and Improvements, Public Enterprises, &c., &c., &c.

By BENTHAM FABIAN.

PRINTED AND PUBLISHED BY THE
SALT LAKE TRIBUNE PRINTING AND PUBLISHING COMPANY
SALT LAKE CITY, UTAH.

1873.

American Studies

PREFACE.

In presenting to the Public the accompanying statement relative to the Resources of Utah, and Statistics of Progress for the year 1872, an apology is offered for any inaccuracies which may have inadvertently crept into the work. The utmost pains have been taken to make the whole reliable in every respect; but in some instances unexpected difficulties were encountered in obtaining strictly correct information. The compiler begs to acknowledge obligations to the following gentleman for valuable assistance and suggestions:

Robert L. Campbell, Esq., Secretary of the Deseret Agricultural and Manufacturing Society, Joseph L. Barfoot, Esq., Superintendent of the Museum, Salt Lake City. Joseph B. Meader, Esq., Assayist, and James Sharp, Esq., General Supeintendent of the Freight Department Utah Central and Southern Railroads, also E. L. Sloan, Esq., compiler of the Salt Lake Directory.

Respectfully,

THE PUBLISHERS.

INTRODUCTION.

The extraordinary and rapid progress made in the development of the mining interests of this Territory during the past twelve months, and consequent impetus given to every branch of industry, is perhaps without a parallel in the history of any country. The year just closed is only the second one since mining was fairly commenced, for, although discoveries had been made and locations entered as early as the year 1863, and prospecting was continued, and in some instances sufficient work done to comply with the mining laws regulating the basis of title to ownership; yet it was not until the commencement of the Utah Central Railroad, in the fall of 1869, which was to connect Salt Lake City with the great Trans-Continental railroads then being pushed to completion, that mining operations were fairly commenced, for anterior to that time the cost of transportation to either San Francisco or Eastern markets was too high to warrant the shipment of ores of ordinary or low grade character, such as the majority in the Territory have proved to be. The only products of the mines shipped previous to the year 1870, were gold dust from the placer mines of Bingham Canyon, and some small parcels of high grade ore from Little Cottonwood Canyon and East and Dry Canyons in Ophir District.

The erection of smelting works and stamp mills was a movement in the right direction, for the value in the saving of expense and freight cannot be too highly estimated. There are already twenty-one smelting works in the Territory, and their united capacity is six hundred and sixty-six tons of ore per day. There are also four stamp mills and two steam batteries, the combined crushing capacity of which is one hundred tons of ore per day; making in all a total capacity of seven hundred and sixty-six tons of ore per day. This is only a commencement of that branch of enterprise. In addition to the foregoing, the Germania Separating and Refining Works have recently been built, and are now in successful operation. These works are a most important element in connection with the development of the mining interests of the Territory, and their value cannot be over-estimated. The process of manipulation separates all impurities from the base bullion, and extracts the pure lead and precious metal, thereby saving the expense of shipping worthless matter at great cost to points far distant.

Mineralogists and metallurgists will find in Utah's store of mineral wealth a broad and almost inexhaustable field for study and research, as it embraces almost every description of metals, together with many of the rarer minerals. Perhaps no other country on the face of the globe can boast of so large and varied a collection, comprising as it does, gold, silver, lead, copper, iron, bismuth, cinnabar, black lead, sulphur, alum, borax, nitrate of potash, sal ammoniac, carbonate of soda, gypsum, common salt, coal, marble, fire, potter's and brick clay, Fuller's earth, petroleum, and a large variety of gems, some of them very valuable.

The establishment of ore sampling works, of which there are five in Salt Lake City, have proved of great service to both buyers and sellers in adjusting and settling the values of ores, thereby preventing delay and mutual distrust.

The value of agricultural products during the year amounts only to $6,149,925, which is about half of what it should be to meet the demand. In consequence of the shortness of supply it was necessary to import from California and elsewhere sixteen and a half million pounds of produce, which should have been raised at home.

The subject of irrigating and reclaiming lands, is one of vital interest to the welfare of the Territory, and too much stress cannot be laid upon it. Every effort should be made to induce Congress to pass an act favoring the encouragement of irrigation schemes. Our Delegate to Washington, the Hon. W. H. Hooper, recently introduced a bill, asking for certain privileges and grants of land, to persons undertaking to irrigate barren and desert lands belonging to the public domain and it is earnestly to be hoped that Congress in its wisdom will see the propriety, and, indeed, the absolute necessity of legislating in favor of so vitally important a measure, and pass the bill in question, or one equally comprehensive, during the present session of Congress.

The property value of the whole Territory, according to the Territorial Auditor's report for 1872, was $17,590,560. Now, assuming that the entire population of the Territory is 100,000, the property value of each would be about $176.

The tables of exports and imports are evidence of the commercial strides we have made during the past year. The total value of ore, bullion, lead, silver bars, gold bars and dust exported, amounted to $2,947,891, and wool, tallow, hides, pelts and peaches, to $107,649, making a total of 3,055,540; not a large amount, it is true, but yet enormous when viewed in comparison with our commercial situation of a few years ago, when we could scarcely ship a sack of flour or a load of squash in the way of export, and when our whole revenue was dependent upon the traveling emigrant, the needs of the stage line and such other transient and petty sources.

Not the least among the exports, and which may be noticed in the list for December, is 180,000 pounds of pure lead from the Germania works near the city, and although as matter for congratulation at the close of late year's operation, yet at the close of 1878 we hope to record in its place a still more desirable article of export, white lead, manufactured near the city.

The value of imports on which an approximate calculation can be made amounts to $12,326,479, divided as follows :

Assorted merchandize	$10,54,813
Lumber	1,441,566
Coal	336,000

Besides this one million and a half pounds of machinery of various kinds and descriptions were imported; also sixteen and a half million pounds of produce, nearly two million pounds of stock, three and a quarter million pounds of wagons, three million one hundred thousand pounds of railway material, half a million pounds of ice and nearly two million pounds of sundries.

These figures will show the great excess of imports over exports and productions, and by way of elucidation the following exhibit is offered :

Imports

On which estimates can be made	$12,326,479
Other articles such as machinery, produce, stock, wagons, railroad material, ice and sundries, say	4,000,000
	$16,326,479

Products and Exports.

Products from agriculture	$6,149,925	
Ore, bullion, silver, gold and lead	3,055,440	
Hides, pelts, tallow and peaches	107,649	
		9,313,014
Balance		$7,013,465

The deficiency of seven millions of dollars shows the country to be in debt for borrowed capital to that extent. This amount can, by diligence and foresight, be made up next year in increased mineral and agricultural productions. The lessons learned from writers on Political Economy teach us that in order to insure a healthy and prosperous state of affairs in a community, it is necessary that its outgoings and incomings should be at least equal, and the more the exports are in excess of the imports the more wealthy is the country. A people to be prosperous must realize the truth of the axiom, that "Labor is wealth," first in agriculture, second in manufactures, and third in the pursuit of such other occupations as are of benefit to society, and necessary concomitants to a state of civilization ; and they must also have an abiding faith in, and practice a leading principle involved in the science of Political Economy, which is the application of capital to tne promotion of Home Industries.

Real Estate in Salt Lake City has, since the inauguration of mining enterprises and railroad communication, changed from being a dull and comparatively worthless element financially to being sought after as a source of investment by capitalists, and although the values of parcels of property are as yet very irregular, yet the indications are that operations in lots and other property will, ere long, assume proportions of magnitude with fixed commercial values based upon locations and surroundings.

The great number of new and handsome buildings, public and private, which have been erected during 1872 furnish the very best evidence of confidence in the future. Figures show that $860,500 has been expended in this direction. The amount named is, however, below the mark, as many buildings have been omitted which will swell the aggregate to near upon one million of dollars.

The article on Mining Interests shows how rapidly the mineral resources are being developed and furnishes indubitable proof that the expectations in regard to the future are not merely hypothetical but are based on a sure foundation resting upon facts the validity of which are not open to cavil or can in any way be disputed.

No better proof of the abiding confidence in the future of Utah can be adduced than the net-work of railroads commenced and projected. They are no less than twelve in number. Six of them will be branch lines connecting with the Utah Southern, thereby constituting it the Main Trunk line of the Territory.

The Mechanical Industries are yet in their infancy, but will naturally grow into magnitude and importance as the exigencies of the times require. This branch should be fostered and encouraged, and no pains spared in promoting by every laudable and proper manner the interests attendant upon Home Manufactures.

The carrying out of such enterprises as a Fire Department, a Gas Company, City Water Works, and a Street Railroad in Salt Lake City, all in one year, are still further confirmations, if any were wanting, of the onward march toward a future grand centralization of industries and commerce in this wonderful valley, the population of which ere another decade is past will probably be numbered by millions instead of as now, a hundred thousand.

INDEX.

PAGE.
Agriculture 9
Area of Territory 9
Banks and Banking 22
Buildings 27
Bullion, Shipped and Value 25
Climate 9
Coal Mines 32
Enterprises, Public 31
Exports 23
Freight U. C. R. R. 23
Freight U. S. R. R. 30
Furnaces 15
Geographical Position 9
Gold Shipped and Value 25
Imports 23
Improvements 27
Iron Mines 32
Lead Shipped and Value 25
Manufactories 25
Mechanical Industries 25
Mineral Resources 10
Mining Interests 11
Mines, some of the Principal 33
Ore Shipped and Value 25
Population 9
Property, Value of 9
Public Enterprises 31
Railroads 20
Real Estate 22
Refining Works 17
Sampling " 19
Seperating " 17
Silver, Shipped and Value 25
Smelting Works 15
Soil 9
Stamp Mills 16
Telegraph Lines 23

RESOURCES OF UTAH.

Statistics of Progress for the year 1872.

GEOGRAPHICAL POSITION, AREA, POPULATION, CLIMATE, SOIL, AGRICULTURE, Etc.

The Territory extends from the 37th to the 42d parallels of north latitude, and from the 109th to the 114th degree of longitude.

The area is about 70,000 square miles.

The last census taken in the year 1870 shows the population to be 86,846. This has been increased since, on account of the influx of persons interested in mining operations, and other causes, and may now be computed at 100,000.

The climate is very salubrious and healthy. Intense cold and heat are rarely felt.

The summer season is dry, and a rainfall of long continuance seldom occurs during the year. During the winter there is an abundance of snow, especially in the mountains; on some of the highest points of which it hardly ever melts.

The proportion of land susceptible of cultivation is small, the general character of the Territory being that of mountain and desert. Some tracts of land, apparently fine, rich soil, of superior quality, fail to produce crops owing to the superabundance of alkali and other mineral substances, which encrust the surface of the earth; but successful experiments towards reclaiming such land have been made and the results will eventually turn out very profitable.

The land at the base of the mountains is formed of washings, and consists principally of gravelly loam, and is well adapted to the growth of wheat and other cereals. Wheat is the great staple product of the Territory.

Vegetables grow to an astonishing size and are of superior quality.

In the southern part of the Territory cotton is successfully cultivated, and madder, indigo, figs, almonds and other tropical fruits are raised in that section.

The climate and soil are particularly adapted to the production of fruit, apples, pears, peaches, apricots, plums, grapes, currants and other small fruits are produced, not only in great abundance, but of the finest quality.

Owing, however, to the long drouths which prevail during the summer months, the agriculture of the country is carried on at a heavy expense, incurred by irrigation, the land having to be watered several times to produce wheat and barley, and oftener for Indian corn and roots.

The necessity of irrigation entails a continual expense upon the agriculturist in cleaning out ditches and canals and repairing dams. On much of the soil the ditches have to be cleaned out twice a year. Good wheat, corn, and vegetables may be produced in abundance if carefully irrigated.

The last report on the extent and expense of irrigating canals, as furnished by Robt. L. Campbell, Esq., Secretary of the Deseret Agricultural and Manufacturing Society, is dated 1865, and although very incomplete, from the fact that the work having been steadily going on ever since, may serve to give some idea on the subject.

At that date the number of canals was 277; the total length in rods was 333,862; the cost of construction, including dams, $1,766,939; the number of acres irrigated 163,949, estimated cost of canals in progress, $828,730.

The following is the estimated quantity of land under cultivation and the crops raised during the present fiscal year also furnished by Mr. Campbell.

Wheat, acres	75,000
Barley, "	9,000
Oats "	15,000
Indian Corn, acres	12,000
Hay, "	90,000
Sorghum "	7,000
Potatoes, "	8,500
Fruits, Vegetables and small crops	10,000
Total	226,500

The average yield per acre of the various products is estimated as follows:

Wheat, bushels	23
Barley, "	30
Oats, "	31
Indian Corn "	20
Potatoes, "	139
Hay "	1⅓
Sorghum gallons	79

From the above data the quantity of products raised may be estimated as follows:

Wheat, bushels	1,725,000
Barley, "	270,000
Oats, "	465,000

Indian Corn, bushels	240,000
Potatoes, "	1,181,500
Hay, tons	150,000
Sorghum, gallons	553,000

Value of Agricultural Products.

Wheat,	Bushels,	1,725,000 @	80c	$1,404,000
Barley,	"	270,000 "	75	202,500
Oats,	"	465,000 "	62½	290,625
Indian corn,	"	240,000 "	80	192,000
Potatoes,	"	1,181,500 "	50	590,750
Hay,	Tons,	150,000 "	$20	3,000,000
Sorghum,	Gallons,	553,000 "	85c	470,050
		Total,		$6,149,925

Property Value.

The total value of assessable properties in the Territory, according to the Territorial Auditors' report for 1872 was $17,590,560, divided as follows :

Counties.	Amount.
1 Salt Lake	$7,694,908
2 Box Elder	1,485,556
3 Utah	1,317,664
4 Weber	1,118,140
5 Cache	808,060
6 Summit	704,112
7 Davis	691,948
8 Sanpete	580,236
9 Tooele	539,888
10 Washington	482,924
11 Morgan	392,316
12 Millard	374,512
13 Iron	336,324
14 Juab	330,000
15 Kane	225,052
16 Beaver	199,344
17 Wasatch	121,944
18 Sevier	88,568
19 Rich	49,256
20 Piute	29,808
Total	$17,590,560

MINERAL RESOURCES.

The mineral resources of Utah are extraordinary in their diversity and extent, and afford an inexhaustible field for enterprise worthy the attention of science and capital. Among them are the ores of all the principal metals, together with many of the rarer minerals.

Gold is found in several districts, both in the form of gold quartz, in placer mines, at Bingham Canyon, and more or less associated with the argentiferous galenas of the Territory, especially in the ferruginous ores of Big and Little Cottonwood and Bingham Canyons.

Silver is found in the native state, but not in large quantity. In its various ores, however, it occurs almost all over the Territory, associated with other ores, such as those of copper, lead, antimony, arsenic, etc. It occurs in small quantities in the form of dark ruby silver, (antimonial sulphuret) and light ruby silver (arsenical sulphuret) at Butterfield and Black Jack Canyons in the Oquirrh range of mountains ; as horn silver, chloro-bromides and iodides, in East Canyon, Dry Canyon, Tintic and in the Star, Sevier and other districts in Southern Utah. In combination with lead it is broadly distributed over the Territory, especially in the Cottonwood and Stockton Districts. It is found with copper at Tintic, Star District and the northern part of the Territory.

Lead is widely disseminated, being found in the form of argentiferous galena and carbonate of lead in nearly all the mining districts of the Territory, and occurring in large bodies in the Cottonwood, Bingham, Stockton and Lake Side Districts, notably in the celebrated Emma, Wellington, Flagstaff and other mines in Cottonwood, and in immense bodies, though carrying less silver, in Bingham Canyon and Rush Valley. It occurs chiefly as carbonate of lead, sulphuret of lead (antimonial, arsenical, cupriferous and argentiferous). In small quantities as sulphate, sulphato-carbonate, chloro-arseniate and chloro-phosphate of lead.

Copper.—Ores of Copper, though hitherto not much sought after, are abundant throughout the Territory. Copper is found in the native state in small quantities at Ophir, Tintic, and in Southern Utah, but it occurs chiefly as malachite, azurite) green and blue carbonates), silicate of copper, vitreous copper ore (sulphuret) and peacock ore. Ruby copper (sub-oxide) is found at Bingham canyon whence also a considerable quantity of native copper has been panned from the creek. Most of these ores contain silver in variable proportions and some also carry gold, the ore from the Mammoth Copperopolis mine at Tintic containing considerable gold. Some of the specimens of azurite and malachite constitute the most beautiful of Utah's minerals, some of the pieces of malachite comparing favorably with that found in the Ural mountains in beauty, and only wanting in size.

Iron ores are very plentiful and of excellent quality, covering a large portion of the Territory. Excellent hematites are found in the South, also in Cottonwood canyon, and Skull and Rush valleys; good iron ores are also found in Weber and Cache valleys, and Iron and Washington counties. Magnetic iron ore is found in the Cottonwoods and also associated with Spathic iron in Rush valley. Smelting operations, on a limited scale, were about four years ago commenced in Iron county, but owing to the want of superior fuel, reduction was discontinued, but has been since resumed. A fine quality of micaceous iron ore is found in Cache County.

Bismuth ore is found in Beaver District, but not sufficiently rich to pay for reduction without previous concentration. Sulphide of cadmium also occurs with it. It is also found in Black Jack Gulch, Bingham Canyon, and assays 43 per cent. Bismuth and 35 per cent. silver. There is no lead of consequence.

Cinnabar is found at Camp Floyd, and realgar and orpiment in a very pure form in

Black Jack Canyon in the Oquirrh Range The sulphuret of antimony, which is the principal ore from which the metal is extracted, is found here in considerable quantity.

Pyrolusite (peroxide of manganese) is associated with several different minerals in Provo, Snake Creek, etc., while graphite, black lead, native sulphur, and especially iron pyrites, alum, borax, nitrate of potash, sal ammoniac, carbonate of soda and gypsum are disseminated over the Territory.

Common Salt exists in enormous quantities, the lake itself being an immense reservoir from whence very large crystals can be had, and large bodies of rock salt are found in the south, one variety being tolerably pure and available for diathermal purposes.

Coal of good quality is found in various parts of the Territory, and has been worked for some time past in Weber Canon. It is generally lignite, but the coal found at San Pete is bituminous, and yields a superior quality of coke. From recent developments, the southern portion of Utah appears to be well supplied with coal, a most important item in a smelting and manufacturing district.

Fire Clay of a superior description is raised a short distance north of Salt Lake City; Mr. Pascoe being the proprietor of the bed, while in Bingham Canon are large deposits of fire clay, owned by Mr. Cotton, Messrs Morris & Evans, and others. A species of *quartzite* or *sand stone* found in Red Butte Canon near Camp Douglas, within a few miles of Salt Lake City, is also owned by the last named firm, who supply it for the erection of blast furnaces; and from competitive trials of well selected stones, with the fire brick used in Utah, it bears a good comparison. Clays suitable for pottery ware abound, and in the neighborhood of Ogden and of San Pete; Kaolin for China ware is plentiful; building stone of every descriptions abounds, lime stone forming the chief rock of the country; there being also abundance of granite, quartzite sand stone, syenite, porphyritic rock and lavas. Carbonates of lime are also found, very perfectly crystalized in the forms of calcite and arragonite.

Marble.—Fossilliferous lime stones, (bird's eye and figured marbles) from Provo Valley, and other parts of the Territory have been worked to a limited extent. Quartz crystals occur, frequently in clusters, both colorless, amathystine and different shades of brown.

Of Volcanic productions there are ample remains, as witnessed by the porphyry, trachyte, lava, pumice and obsidian contained in Utah. Some beautiful specimans of obsidian have been found which might almost rank with gems, and among them may be placed chrysocola, opals, chalcedony, onyx and a host of other beautiful minerals too numerous to mention. Asbestos, fullers earth, and petroleum have also been discovered. Among gems proper, have been found rubies, (the large ones inferior to the smaller,) beryl, and white topaz.

With the continued development of the resources of the Territory, new treasures will doubtless be discovered in Utah. The foregoing statement is of itself sufficient to prove how seemingly inexhaustible is the hidden wealth of this country.

Visitors to Salt Lake City who are interested in Mineralogy and Mitallurgy should not fail to examine the very large number of specimens on exhibition at the Museum in that city, the different peculiararities properties, and adaptabilites of each of which are so ably explained by the intelligent and courteous Superintendent Professor Joseph L. Barfoot.

THE MINING INTERESTS.

Utah is traversed from north-east to south-west by a great mineral belt, about seventy miles in width and several hundred miles in length, the result, doubtless, of several distinct upheavals, peculiarly well defined, and in variety of production covering a wide range of metalliferous deposits.

The development of this discovery, during the past two years is probably without a parallel in history, and the mines of Utah have taken their place in the public mind as one of the permanent industries of the country.

The minerals consist mostly of the base metals, of which lead is the chief, carrying silver, and in some cases gold, in quantity varying from a few ounces to one hundred and fifty ounces of the former metal to the ton.

Copper also occurs in various forms, and in many instances large quantities. Valuable discoveries have been made in chlorides and "horn silver," of surpassing richness, varying in actual assay value from $500 to $27,000 per ton. Assays have been made from ore taken from the Silveropolis mine, in East Canyon, of $20,000 per ton, and shipments of a number of car loads of ore have yielded an average of $650 per ton.

Ore from the Shamrock mine, in East Canyon, has assayed as high as $[illegible]7,000 per ton. Shipments have been made from this mine which have given returns of from $1,800 to $5,600 per ton.

The Mono mine, in Dry Canyon, is also noted for the richness of some of its ores. Sales of small parcels have been made at the following figures: 400 lbs. for $5,000, equal to $20,000 per ton. One and one-half tons at the rate of $2,500 per ton, and the same quantity at the rate of $2,400 per ton; two tons at the rate of $1,600 per ton; three and one-half tons at the rate $1,000 per ton, and two tons at the rate of $650 per ton.

The names of the principal mining districts and the leading mines developed and being actively worked are as follows:

Little Cottonwood District.

This district is in the Wahsatch range of mountains and is distant twenty-five miles south-east of Salt Lake City, has always been, and still is, foremost in the rank of mining districts of the Territory. Discoveries and locations were made as far back as 1865, but no particular action towards development was taken until the discovery of the rich and enormous deposits on the Emma lode in 1869 which gave an impetus to further research and subsequent bringing to light of other lodes and deposits considered to be equally promising. This district is now pretty well prospected and is dotted all over with claims and mines being developed and worked. The hill called Emma after the famous mine of that name is being burrowed in all directions by a network of tunnels, some of which have produced very favorable results to the owners of them.

The class of ore is argentiferous galena mixed with carbonates.

The principal mines in the district are: The Emma, Flagstaff, Montezuma, Savage, Davenport, Hiawatha, Last Chance, Wellington, Lexington, Grizly, Matilda, Vallejo, Titus, Highland Chief, Enterprise, Frederick, North Star and Winsor.

The principal tunnels now being run are:—the Illinois, Gladiator, Howland, Etna, Ely, Herman, Bay City, Pacific, Victory, May & Excelsior and Brewer & Lapham.

Big Cottonwood District

Is also in the Wahsatch range of mountains, and situated about 25 miles southeast of Salt Lake City.

The first discoveries were made in the summer of 1863.

The principal mines are the Davenport, Reed & Benson, Highland Chief, Wellington, Richmond, Teresa, Prince of Wales, Congress, Maxfield, Mount King, Scott, Lady Elgin, Buckeye, Jr., Panacea and Imiscio.

Also on Kesler's Peak, in the same district, are the Homeward Bound and Sailor Jack, belonging to the Deseret Mining Co. the Provo, belonging to Major Meeks, and the Noon, Home Ticket and Jefferson Tunnel, the property of J. J. Noon and associates.

The general character of the ores is carbonate of lead and galena, embracing antimonial, arsenical and argentiferous qualites.

The developments in the Highland Chief and Wellington mines are being made with an Ingersoll's patent steam drill. The rock is very hard limestone, with strata of flint and quartz.

Four feet of tunneling is excavated by the drill every 24 hours.

Parley's Park District,

Also in the same range, is distant about thirty-three miles from Salt Lake City. Its position is on the divide between Parley's Park and Provo Valley, and consists of three districts known as the Uintah, Howland and Blue Ledge.

This distrsct was originally called the Uintah, and the Howland was cut off from it in the spring of 1872. The Blue Ledge District was also organized in the same year.

The principal mines in Uintah District, are the Pinyon, Walker and Webster, also the Bobsail and Central. A Tunnel 300 feet long has been run to strike these mines, cost of work $3,000.

In the fall of 1871, the Pioneer and Idaho were located in the same district and more recently the Gregory and Porcupine.

The principal Mines in the Howland district are the Flagstaff, Wild Bill and Rocky Bar.

In the spring of 1872 the McHenry was discovered in the Blue Ledge District and created at the time some excitement, on account of the extensive croppings of rich milling ore.

About the same time the Ontario was located, and still later the Dolly Varden, Highland Jennie and Cariboo, all high grade galena ores that promise exceedingly well, the veins being large and the ores assaying well from the surface.

Character of ores, both smelting and milling.

American Fork District.

This district is southeast of and adjoins Little Cottonwood District. It is distant from Salt Lake City 34 miles by road *via* Little Cottonwood, and 40 miles by the Utah Southern and American Fork Railroads.

The majority of the ore is high grade smelting ore, composed of galena and carbonates, but there is some very fine free milling ore in the district as, for example, the Silver Glance, where large bodies of rich ore are exposed.

The principal mine in the district is the Miller, owned by Howland & Aspinwall of New York, who have erected extensive smelting works contiguous to it, which are called the Sultana Smelting works. The company is also constructing a narrow gauge railroad from the works to the U. S. Railroad, sixteen miles of which are already completed.

This mine and the Silver Glance are two of the most important mines in the Territory, consisting of immanse bodies of ore of very high grade.

The names of other mines in the district are the Silver Glance (milling ore), the Bullion, Mary Ellen, Terrible, War Eagle, Queen of the West, Vermont, Pittsburg and Wild Dutchman.

Snake Creek Mining District

Was organized in ths fall of 1870. It is situated easterly, and adjoins Little Cottonwood aud American Fork Districts, and is approached by wagon road either from Salt Lake City, via Parley's Park, or Provo City, up the Provo river.

The principal mines are the Beckwith, Ohio, Snow Squall, Silver Chief and Howland. The Peninsular Tunnel and Mining Company has been organized to work the mines in this District. The Company is already at work opening their mines with good results.

West Mountain Mining District,

Commonly known as

Bingham Canyon District,

Is on the Eastern slope of the Oquirrh range of mountains distant twenty-five miles southwest of Salt Lake City. It and its tributaries are situated in the core of the upheaval traversing Utah. The igneous rocks prevail in this district, and the leading mines already developed are situated in the granite formations.

The limestone formations crop out on the north-western and south-eastern extremities of the district, in which milling ores and the gray carbonate smelting ores are found in great abundance. But the largest, the most continuous and the most reliable veins are found in the granite formations.

There are four distinct belts of mineral running through this district. That of the two central belts is characterized as sulphuret, carbonate and oxide ores, assaying from 30 to 70 per cent in Lead and from 20 to 300 ounces in silver per ton. The north-west belt is of a still higher grade of mineral; the grey carbonate ores generally prevailing, and varying in assay value from forty to one thousand ounces in silver per ton, and from ten to forty per cent in lead. The south-east belt gradually diminishes in lead assay from the north-west towards the south-east side of the belt. The ores found in this belt are generally of the class known as milling ores, assaying in coin value from a few ounces to one thousand ounces in silver per ton.

Some valuable placer claims have been worked in the main portion of this canyon which have yielded an aggregate of upwards of $1,500,000.

The first discoveries were made in 1863, by soldiers attached to the command of General Connor. In 1865 Mr. Bottsford located the mines now owned by the Utah Silver Mining Company of London.

The principal mines in main Bingham are the Winnamuck mine and tunnel, with three smelting furnaces, recently sold to a European company. The West Jordan, Kenosh, Galena, Orphan Boy Consolidation, Vespacian, Sultana, Elizabeth, Northern Light and Fairview, also, the Red Warrior, Dartmouth, Portland and Belshazzar belonging to the Utah Silver Mining Company of London, who have smelters and roasters attached. Also, the Kelsey tunnel, located in a belt of oxides, ten in number, owned by the Kelsey Tunnel Silver Mining Company. This tunnel is already worked some 350 feet into the body of the hill, and has crossed two of the veins six feet and nine feet in thickness.

On Silver Hill also, in Main Bingham, are the Spanish, the Queen and Buckeye mines, lately incorporated in New York with a capital of $500,000.

In Bear Gulch placer claims are worked.

On the divide between Main Bingham and Butterfield Canyon is the Eagle Bird, a mine of great promise, and to the left the Yosemite and Telegraph mines, the latter shows large bodies of carbonate ores in all openings upon it.

In Butterfield Canyon are the Oceola, the Lucky Boy and the Bemis and Hiatt, all well developed and valuable mines.

In Spring Gulch are the Greeley and Royal lodes, also the Legal Tender, all of them bearing ores of a high grade and milling character.

In Carr Fork the Nabob, White Pine and Clipper.

In Muddy Fork the Saturn, Last Chance and Crœsus.

In Markham Fork the Washington, Oro and others.

This district is one of great promise and well deserving of attention, its accessibility at all times of the year, the early completion of a railroad connecting it with the Utah Southern Railroad, and the promising appearance of such mines as the Winnemuck, Northern Light, Fairview, Orphan Boy, Lucky Boy, Telegraph, Crœsus, Last Chance and many others.

Rush Valley District,

In Tooele county, is situated on the west slope of the Oquirrh range of mountains, forty miles southwest from Salt Lake City, on the overland stage road.

The district was located in June, 1864, and the city of Stockton laid out in the same year. Immediately after the discovery of mines was made, a good deal of capital was invested to aid in developing them.

The principal lodes of the district embrace the following: The Silver King and West Extension, Silver King No. 2, and on the east end the Bolivia and Tucson. The Pleasant Hill, Last Chance, Defiance, Potomac, Eureka, Quandary, Vulcan, Metropolitan, Legal Tender, St. Patrick, Great Basin, Our Fritz, Mineral Hill, Peabody, May Bell, Lady Douglass, Great Central and Silver Queen.

The description of ore is argentiferous galena and carbonate of lead, carrying from 50 to 60 per cent. of lead and from $25 to $125 in silver per ton of ore. The ore is considered to be first-class for smelting.

The Ophir District

Was formerly part of the Rush Valley District, and was organized in June, 1870. It is distant fifty-five miles from Salt Lake City, and is celebrated for the richness of its mineral veins. The principal mines in the district may be classified as follows:

EAST CANYON.

On the northeast side of the canyon known as Ophir Hill, Miner's Delight or Blue Monster, Poor Man's Friend, Bath, Buckhorn, Keystone, Fairview, McCullom, Hidden Treasure and Grant Tunnel. The ores are carbonates, chlorides and galena.

ON SILVERADO HILL

Is the famous Silveropolis mine, from which such rich specimens have been extracted, and also the Shamrock (the ores of which have assayed so high).

LION HILL.

On the west side, or Lion Hill, are the Mountain Lion, Mountain Tiger, Zella, Sunnyside, Silver Chief, Silver Exchange, San Francisco, Defiance, Valley Tan and New York.

The character of ores is chlorides and rich sulphurets, with but little lead and some antimony.

CHLORIDE HILL.

On this hill the best developed mines are, San Joaquin and Chloride Jim. The ores are principally chlorides on this hill.

FOOT HILLS OF EAST CANYON.

The Green Chloride and Philadelphia groups of mines are located here. The ore is high grade, and rich in chlorides and sulphurets.

DRY CANYON,

On the East side, known as "Jacobs" and the Snow Storm hills is the celebrated Mono mine which carries so large a per centage of gold in its ores; also the Congress, Utah Queen, Miami, Ida Edna, Wild Tiger, Chance, Kearsarge, Magnolia, Fourth of July, Alabama, Wandering Jew, Scottish Chief and Evening Star.

The ores are high grade, sulphurets, bromides, with but little lead. On the

FOOT HILLS

are the Rip Van Winkle, Baltic, Lowland Chief, and Green Chloride Flat mines. The ores are high grade argentiferous.

There is a fair division of ores in the district—one half being milling and the other smelting. The former are on the West side and the latter on the East side.

Camp Floyd District

Is situated on the western slope of the same range of mountains, about 60 miles distant from Salt Lake City. It was organized early in the spring of 1871.

The principal mines in the district are the Silver Cloud, Sparrow Hawk, Comstock and Mineral Point.

The Sparrow Hawk is owned by an English company. There is a 20-stamp mill belonging to the property.

Other mines are partially developed and give good promise, among them are the Mormon Chief, Queen of the West and Elkhorn.

The ores of this district are chiefly milling, with general combinations in connection, considerable horn silver occurring. The lodes are principally stratified, and occur mostly in limestone formations.

A second mill is in process of erection at Fairfield on the road from Lehi to Eureka, about seven miles from Lewiston, for the purpose of working custom and purchased ores. the owners of the mill are mostly interested in mining claims in the district.

Cinnabar has been discovered in the district and a recent assay showed 5.24 per cent. in quicksilver.

East Tintic District

Is situated in Tintic valley, about 74 miles south-west of Salt Lake City. The core of the upheaval, traversing Utah from north-east to south-west, runs through this district, flanked on each hand by lime formations.

The district was located in the fall of 1870. Following are the names of the principal mines. At

EUREKA CITY.

The Eureka, an extensive, valuable and well developed mine, with smelting works attached. And midway between

EUREKA AND SILVER CITY

The Mammoth and the Mammoth Copperopolis are situated, and the latter is owned by an English company. This mine is at the present time the leading one of the district. The preparations in the shape of buildings and accommodations for an extensive mining business are on a grand scale. The ores from it yield a large per centage of copper, silver and gold and the returns of shipments to Swansea have averaged in some instances from $200 to $300 per ton.

In consequence of the prevalence of silver ore, in many cases with free gold visible, it is contemplated to erect a mill, and a location has been secured at a comparatively short distance from the mine and work is expected to commence at an early day. On the dump there are several hundred tons of good milling ore.

In addition are the Swansea, Chicago, Diamond and North Star, the Highlander Consolidation, comprising the Highlander, Highland Lass, Helena, Josephine and Storm King lodes also the Empire Tunnel.

There are also the Black Bragon and Sunbeam mines. Contiguous to

DIAMOND CITY

Are the Joe Bowers, Shower, Morning Glory, the Diamond Silver Mining Co's group, the Joe Lane, Norwegian and Rising Sun.

The ores in this district are principally milling, with occasional smelting. The greater part of the body of ledge matter is quartzite, containing the chlorides, carbonates and sulphurets of silver, with argentiferous lead, in some instances, also frequently a considerable per centage of copper and some gold, as for example in the Mammoth and Copperopolis lodes.

The veins or lodes are mostly of a fissure character, and are found in limestone, quartzite, porphyry and granite.

About six miles in a westerly direction from Diamond and Silver Cities a new stamp mill is being constructed by a California Co., on what is known as Tanner's Ranch. This mill is expected to be completed and in operation early next spring. The movement will greatly facilitate mining operations in that district.

Ohio District.

This district, commonly known as the Sevier District, is on the Sevier River about two hundred miles south of Salt Lake City. It was organized in 1869. The principal mines are, the Webster, and Bully Boy, both of which have very large surface showings.

There are also the Yankee Blade, Eclipse, Morning Star, Niagara, Rothschild, Great Western and Gould & Curry. The ores of this district are free milling.

Lincoln District,

Formerly called the "Pioneer," is situated four miles north of Minersville, Beaver County, and about 200 miles south-west of Salt Lake City.

The Pioneer district was organized in 1864, and its name changed to Lincoln District January, 1871.

In this district the Mormons commenced working the old Spanish lead mine as far back as 1854, which has since been named the Rollins lode.

The other principal mines in this district are the Quincy, Alameda, Wahsatch, Lewis, Grundy, Creole, Galena and St. Cloud.

The ores of this district are principally Galena.

Star District,

230 miles south of Salt Lake City, was organized in the fall of 1870. There is a plentiful supply of wood and water for mining and domestic purposes. The principal mines are the Taylor, St. Mary, Maxwell, Mars, Pitney, Pacheco, Ruby, Frank, Bibbins, Harrisburg, Gus Gates, Tiger, Rhine, Wilber, Elephant, Jupiter, Big Mormon, Shaunter, Flora, Temperance, Empire, Washington, Hickory, Rebel, Shenandoah and Hope.

The ores are principally of a milling character.

Mineral Point District

Is situated 16 miles from Brigham City and distant 18 miles from Brigham, on the Utah Northern Railroad. This district is receiving much attention from capitalists on account of the immense deposits of iron, which mineral is pronounced better than that found in Lake Superior, the appearance and analytical properties being very similar. The Idaho iron mine shows large bodies of rich iron ore, and is the only mine on which developments have been made to any extent.

The foregoing comprises a list of the leading developed mining districts. Some recent and valuable discoveries have been made, and districts organized in other portions of the Territory, which are in process of development, and will, in due course, take their rank among those of acknowledged value and importance.

Among the latter may be named the

Granite District,

Sixty miles west of Ophir District, organized in the summer of 1872.

The formation is granite, and the croppings stand boldly out and can be traced in some instances over 1,000 feet.

The ore carries much iron, with galena and copper and iron pyrites; also, fine matrix quartz.

Beaver Lake District,

About 250 miles south of Salt Lake City, is a promising District. Four mines are in process of development, viz: The San Francisco, Fairview, Big Mountain and Tecumseh.

The character of ore is galena, chloride, black sulphurets, carbonate, and occasionally horn silver is found in limited quantities.

Still further south are the NORTH and SOUTH STAR, and the San Francisco Districts, all spoken well of, but not yet sufficiently developed to warrant details concerning them.

FURNACES, SMELTING WORKS, AND STAMP MILLS.

Badger State Works.

On State Road, south of Salt Lake City, built in the spring of 1871; one blast; capacity fifteen tons per day; ores treated from Little Cottonwood, Parley's Park and Bingham canyon; Robins, Mackinson & Jones, Lesees.

Wahsatch Silver-Lead Works.

Capital, - - - - - $100,000.
Col. J. F. Cox, - - - President.
Gen. Floyd Aspinwall, - Vice-Prest.
R. P. Lounsbery, - - Treas. and Sec.
A. Wortenweiler, - - - Supt.
Office, - - 52 Wm. st., New York.

Situated at South Cottonwood, seven miles from Salt Lake City, on Utah Southern R. R. One reverberatory, two blast. Capacity 50 tons per day. Built last year. Commenced operations this winter. Smelted about 600 tons; produced about 150 tons bullion. Average assay, 250 ozs. Ore from Reed & Benson, and Emma mines Cottonwood, and Spanish mine of Bingham. Are now in successful operation. Running one furnace and reducing 25 tons per day, producing 7 tons bullion.

W & M. Robins' Smelting Works,

On State road, seven and a half miles south of Salt Lake City, at Little Cottonwood creek, completed May, 1871; has one calciner: capacity fifty tons per day for high grade ores; also one reverberatory.

Saturn Mining Company,

(Limited,) Sandy Station, on U. S. R. R., fifteen miles south of Salt Lake City; incorporated in England; capital £75,000; has three cupola blast furnaces, six feet Sturtevant blower, No. 9; thirty horse power engine; capacity twenty tons per day each furnace; two in constant operation; engine and furnaces under one roof; cost of furnaces and buildings $20,000; location admirable; all ores smelted are purchased in market; have lately been working ores from the Emma, Vallejo and the Windsor Mining Companies. In twenty-six days immediately preceding the 18th of December, 1872, the works turned out 365 tons of bullion, equal to fourteen tons per diem. The average quantity of silver to the ton in the above batch was 160 ounces. G. M. Gerrish, Superintendent.

Flagstaff Silver Mining Company, (Limited,)

Incorporated in London—capital $300,000. Have smelting works situated at the mouth of Little Cottonwood Canyon, built by Buel & Bateman in 1870; working Flagstaff ore.

Three furnaces; two running; the third expected to start soon. The latter is a hot-blast furnace, and of equal capacity with the other two. When the third furnace is running the yield of bullion will be twenty tons daily for the three furnaces.

Superintendent N. M. Maxwell, assisted by J. B. Stanford.

Wellington Mining and Smelting Company,

Little Cottonwood, one furnace, capacity eight tons per day; built by Jones & Pardee, sold to Wellington Co., incorporated in San Francisco January, 1372; ore worked, Wellington mine and custom; approximate production by company 110 tons of bullion; value, 225 oz. of silver, gold and lead $350 per ton. R. Y. Anderson, superintendent.

Monitor Furnace,

Union Fort, mouth of Little Cottonwood; built in 1871; T. R. Scheuner, proprietor; patent force blast smelting furnace, capacity 10 to 15 tons per day.

Utah Silver Mining Company

(Limited), Bingham Canyon; incorporated in London; two furnaces, one of the capacity of 15 tons per day, the other 30 tons per day, and two roasters each 35 feet long; ore worked from the Red Warrior, Portland and other mines. J. R. Murphy, superintendent.

Winamuck Company,

Bingham Canyon; two furnaces, capacity, eight tons per day each; erected by a company from New Haven, Connecticut; Daggett and Bristol, Superintendents.

Sultana Smelting Works,

American Fork Canyon; three furnaces, Capacity eighty-five tons per day—Two of thirty tons and one of twenty-five tons, two built in 1871. Ore worked from the "Miller" mine; bullion at first sixty-seven ounces per ton; later one to one and a half ounces gold in addition; lead pure; Edmund Wilkes, Manager.

Utah Smelting and Milling Company,

Homansville, Tintic; incorporated in Utah; capital, $30,000; completed June, 1871; two furnaces; capacity, twenty tons per day each; working ore Scotia mine; West camp, Tintic District; production, 1,200 tons of bullion; average, 125 ounces silver and one and a half ounces gold per ton; Joab Lawrence, President; T. S. Clarkson, Treasurer.

Tintic Smelting Company.

Diamond City; completed, October. 1871; built by Hopkins, Parsons & Co.; two furnaces; capacity, twenty tons per day; treating ore from the Shower mine; Charles Pointer, Superintendent.

Waterman Smelting works,

Stockton; two cupolas and blast, capacity 14 tons each per day, completed May, 1871; work ore from Hidden Treasure, (St. Louis) from Dry Canyon, and St. Patrick, Grand Cross and Metropolitan, Stockton mines; about 330 tons of bullion, average 120 oz. silver per ton. Superior lead, Isaac S. Waterman, Philadelphia, proprietor.

Ophir Upper Smelting Works,

East Canyon; built by Mr. Raymond in the fall of 1870; two cupola blast, capacity twenty-five tons per day; ore worked from Sevier, Last Chance and other mines in Ophir district; about 200 tons of bullion in the last six months. Isaac S. Waterman, of Philadelphia, proprietor.

Ophir Mining and Smelting Works,

East Canyon; incorporated in Utah; one furnace completed July 4th, 1871; one building; capacity fifteen to twenty tons per day; working Fairview and other mines; one run of forty tons of bullion averaged $165 to the ton; E. J. Ryan, superintendent.

Utah Mining and Smelting Company,

East Canyon, incorporated in London, England; capital stock $500,000; steam jet furnace, completed June, 1872; capacity fifteen tons. Intention to build large milling, reduction and smelting works. Mines to be worked: Miners' Delight and other claims. E. S. Blackwell, manager.

H. S. Jacobs & Co.,

Stockton, Tooele County; three blast furnaces: engine forty-horse power; capital $200.000; to work ores from Dry Canyon and Stockton mines, Rush Valley District. H. S. Jacobs, manager, and H. S. Durkee, assistant. Capacity of furnaces, twenty tons each per diem.

Gilbertson & Berry's,

Deep Creek, built 1872; one furnace; thirty tons bullion sent to Salt Lake City averaged $93 silver per ton. Within a few miles of the works is a bed of excellent fire stone, declared by judges who have seen it to be the best in the Territory. There is also a superior quality of Iron Ore suitable for fluxing purposes.

Warm Springs Smelting Works,

Salt Lake City, built in 1870; one blast and reverberatory; capacity twenty tons per day; ores worked from Little Cottonwood, East Canyon, Parley's Park and Bingham Canyon; F. J. P. Pascoe, proprietor.

Register Smelting and Refining Co.,

Ogden; one furnace; built in fall of 1871; ore worked from East Canyon mines; Mr. Purnall, manager.

Alger Reduction Works,

Corinne; built in 1871; Henry Sanger, proprietor.

Total capacity of Furnaces and Smelting Works, 666 tons per day.

STAMP MILLS.

Pioneer Mill, Walker Bros.,

East Canyon, fifteen stamps, power for twenty-five; capacity, twenty-five tons per day, dry crushing; erected July, 1871; Aiken furnace just completed, same capacity; ore chlorodized to 86⅔ per cent.; first run Tiger ore, thirty days produced $38,000; silver bars .991 to .997 fine. Working ore from Tiger, Zella, Rockwell and other mines, Lion Hill; cost about $60,000. Lathrop Dunn, Superintendent.

Eureka Mining Company of Utah,

Homansville, Tintic District; incorporated in Utah, capital $500,000; twelve stamp, capacity twenty; four tons per day. Working ores from the company's mines, Eureka Hill. Joab Lawrence, President.

Camp Floyd Silver Mining Company, (Limited,)

Incorporated in London, England, capital, £120,000; twenty-stamp mill, thirty tons per day capacity; power and machinery for thirty stamps; a forty ton Aiken roasting furnace; treat ores from Sparrow Hawk, Last Chance and Marion mines belonging to the company. E. H. Shaw, Managing Agent; E. B. Wilder, Superintendent.

Brevort Mill,

East Canyon; steam battery; capacity ten to twelve tons per day, custom ore.

Chicago Company's Mill,

Ohio District, near Sevier River; steam battery, capacity six to eight tons per day; working ores from the company's mines.

Wyoming Silver Mining Company.

Wyoming Silver Mining Company of Cincinnati. Ohio. Location of Mill at Homansville, East Tintic. Present capacity, ten stamps with arrangements for fifteen additional. The mill is furnished, with a Stedtefeldt furnace said to be the first one erected in the Territory. Capacity, forty tons per day. Will commence running on or about the 17th inst., and work custom ores. Mr. D. P. Bell, of California, builder.

Total capacity of Stamp Mills, 100 tons per day.

GERMANIA SEPARATING AND REFINING WORKS.

The object of these works is to separate from the impure lead bullion the precious metals which it contains, as well as its impurities; and to effect this on the spot where the bullion is produced, and thus save the expense of shipping worthless matter at great cost to points far distant.

The works are situated on the west side of of the U. S. R R., about eight miles from Salt Lake City, and were commenced nearly six months ago, and although not yet completed, are now in operation and producing about forty tons of desilverized or marketable lead daily.

The Buildings

Are extensive, substantial, and arranged with a view to economy of labor and convenience in manipulation. They consist of the main building, or furnace house, refining house, assay office, engine house and all necessary offices and out-houses, together with manager's and superintendent's dwellings. In the FURNACE BUILNING are five large cast iron pots, set in substantial brick work, each one over its furnace or fire place, two reverberatory softening furnaces, two calciners, and two flowing furnaces. Connected with this building is the ENGINE HOUSE, containing a fine forty-five horse power engine, and a fifty-five horse power boiler. A little to the north of this is an inclined SHAFT FURNACE, while to the west of the works, at a distance of a few rods is a substantial BRICK STACK, which is connected with the furnaces by means of underground flues of strong masonry. A side track is laid from the main track to the works, by means of which all the materials employed are brought to their respective destinations without transshipment.

The process which is here used for separating the lead and silver is that known as

Flach's Process,

With some additions and improvements made by Mr. Sieger, the superintendent of the establishment.

The following description will give some idea of the

Modus Operandi.

About 23 or 23½ tons of base bullion, as received from the different smelting works is put into one of the largest of the pots, which are five in number, two of them having a capacity of 25 tons each, the other three being smaller; the whole number being set in the form of a wedge, the two largest forming the broad part, while the smallest pot forms the point. A sharp heat is kept up until the impure lead is thoroughly melted, and sufficiently hot to melt the zinc (which is the medium of separation) immediately on its addition, or at a temperature of about 411 degs. Celsius, the melting point of zinc. Zinc is employed for the separation of gold, silver and copper from lead, owing to its possessing a greater chemical affinity for these metals than that of lead. The zinc employed at this establishment is of two kinds, viz., commercial or good zinc, and dross zinc (a refuse matter from galvanic batteries) which contains about 30 per cent. of iron. The former is obtained from Illinois at a cost of 9 cts. per lb., and the latter from New York at a cost of 5 cts. per lb. When the base bullion is tolerably free from impurities and contains from 150 to 200 oz. of silver per ton 2¼ to 2¾ per cent. of zinc, or 3 to 3½ per cent. of dross zinc suffices for its complete desilverization.

As soon as the metal has attained the requisite heat, from ½ to 1 per cent. of zinc, or from ¾ to 1½ per cent. of zinc dross is added to the molten mass, which is well stirred by two men for half an hour, and then allowed to remain still for three hours. Immediately after stirring, the fire is withdrawn from under the pot, and the metal allowed to cool to a dull red heat. The zinc being thoroughly mixed with the lead, takes up the gold and copper, with the greater portion of the silver, and rises to the surface, forming a scum or cake which gradually covers the whole of the lead.

The object of adding a portion and not the whole of the zinc at one time, is to avoid the caking of the zinc on the surface of the metallic bath, whereby it would not be in a state of division sufficiently fine to mix thoroughly with the lead.

At the expiration of three hours this skum is skimmed off and transferred to the pot next in advance. The whole operation, from the commencement to this point, occupies about four hours, but varies with the amount of the impurities in the lead. A second addition of zinc is now made in the proportion of a ½ to ¾ per cent. of zinc, or 1 to 1½ per cent. of zinc dross.

The dross or scum in the second or advanced pot, after being melted, stirred, and allowed to cool, is skimmed and the skimmings transferred to the third, or end pot of the series, the alloyed lead and zinc containing a little silver which has separated from the dross being moved back to No. 1. This is effected by means of an iron gutter leading from the rim of one pot to that of the other, into which the lead is ladled. A similar process is then performed with pot No. 3. The dross being skimmed off and transferred to a receptacle called the "safe," and the separated alloy of lead and zinc carried back. The remainder of the zinc having been added to pot No. 1, it is again stirred and skimmed, the skimmings being put aside for a further operation.

The lead remaining in pot No. 1, is now practically free from gold, silver and copper, but is rendered a little hard by a portion of the zinc remaining in it, together with a little antimony, of which, if there is much in the base bullion, a small per centage remains.

At the bottom of the large pot is a pipe connected with an iron gutter leading to the hearth of a reverberatory softening furnace, which is placed at a lower level than that of the pots, to avoid the necessity of moving the lead by hand.

These furnaces, of which there are two, one for each large pot, are 15 feet 6 inches long and 9 feet 4 inches wide, internal dimensions, with a hearth or bed of sufficient depth to contain the contents of the large pot. The bed of this furnace is composed of a large iron pan cast in three pieces and having the bottom flat and gradually curving to meet the upright sides and ends. This is covered with fire clay, and over the clay with fire brick set on end. When well put together these parts will last for years. The furnace has only one fire grate, placed at the end. These furnaces are built upon arches, which serve to keep the bottom cool, and in order to more easily remove any lead which through bad setting may trickle through. The furnace having been raised to the requisite temperature, the lead pot is tapped and the metal allowed to flow into the furnace. The heat is then kept up and a portion of the zinc and antimony is oxydized and escapes in the form of fume, while the remainder forms a scum which rises to the surface and covers the bath of lead. The lead is well rabbled from time to time with iron rakes, in order to expose a fresh surface to the air, and this is continued until the lead shows, by samples taken from the furnace, that it is pure and ready for tapping.

At a distance of a few feet from the end of the furnace is another pot, called the market pot, the level of its rim being a little below that of the hearth of the furnace, and into this the lead, after being skimmed, is allowed to flow through an iron gutter.

The moulds, which are on wheels, having been run under this pot, the lead is admitted into them by means of a tap which stops the supply as each mould is filled.

These bars of lead are made to weigh about one hundred and forty pounds each; and, when cool, are taken out and ready for shipment. They are now wheeled up an incline, but it is intended to have a raised tramway over the tapping place, on to which small wagons containing the bars will be hoisted, and run direct to the side track. This lead is now pure, containing, on an average, not more than half a dwt. of silver to the ton, and being free from gold, copper and all impurities, and fit for any of the purposes to which lead is applied, either for making white or red lead, sheet or pipe.

The loss in this furnace is very trifling, not amounting to more than one-half per cent., because the molten lead is almost continually covered with the crust of zinc, etc.

The whole operation, from the loading of the first pot to the tapping of the market lead, occupies twenty-four hours, and at the present time the capacity of these works is

40 tons per day.

So that each twenty-four hours, about 90 per cent of the bullion operated upon is returned as pure marketable lead.

The dross obtained from the last skimming of No. 1 pot is transferred to a flat-beded calcining or roasting furnace, of which there are two in the main building, one for treating the pot skimmings, the other for the skimmings from the reverberatory furnace. It is here thoroughly roasted at a temperature insufficient to soften it, so as to get rid of any remaining zinc or antimony, and when sufficiently roasted is then put in the flowing furnace, where the lead is separated from the iron and other matters which form a slag which is worthless. The lead is tapped and returned to No. 1 pot, with a fresh charge of bullion, when the same routine is again gone through. The flowing furnace is very similar to the reverberatory softening furnace, differing only in the form and material of the furnace bed. The calciners, before mentioned, have each two grates, with a flue rising from the center of the furnace. The object of the two grates is to obtain a much higher degree of heat when necessary for the roasting of refractory or very impure skimmings,

The same process is gone through with the skimmings from the softening furnace. The next point is the treatment of the rich alloy from pot No. 3, which was placed in the "safe." This is taken to the shaft furnace before mentioned, and which will be now described.

Description of Shaft Furnace.

It is an inclined shaft furnace with the back sloping towards the front, at a little distance above the tuyeres the front recedes more abruptly from the back. The internal dimensions are, from breast to back two feet seven inches, and from side to side two feet six inches. It has three tuyeres having a diameter of only 1¼ inches, and a pressure of blast equal to about 24 inches of water, or about one pound upon the square inch. This blast is produced by a blowing cylinder, 24 inches in diameter, and having a 24-inch stroke. The blast passes into a chest or reservoir, and is thence conducted by pipes to the furnace.

The fuel used is coke (that in all the other furnaces, with the exception of the crucible furnace, being Vandyke coal) which is obtained from Pittsburg, and costs, delivered at the works, about $28 per ton.

The Fluxes

used are Hæmatite iron ore, which is obtained from Rawlings, and costs about fifteen dollars per ton, delivered, and a little lead slag, of which plenty can be had in the neighborhood, the charge is composed as follows: Rich alloy, 250lbs; Iron ore, 180lbs; Coke, 55lbs; and a little lead slag. After a good heat has been raised in the furnace the charging is commenced; the coke is first thrown in and spread evenly over the surface. The rich alloy is then charged, being all fed against the front of the furnace, the iron ore and lead slag are then thrown in mixed together, and spread evenly over the furnace, three of these charges are worked in one hour, so that about sixteen thousand pounds of alloy are passed through this furnace in twenty-four hours. The heat is maintained so low that the furnace at the feed door is perfectly black and quite cool; the only flame visible being a small reducing flame running up the inside of the front of the furnace. Owing to the peculiar construction of the furnace, the charge gradually sinks and meets the sudden incline, from whence the alloy passes down to the zone of fusion, in the center of the furnace, without touching the walls, and is not melted until when within a few inches of the tuyeres. By this process the copper is obtained as matte, and the gold, silver and lead, in the form of a highly enriched lead. This rich alloy is tapped off about once in every hour and a quarter, and the slag about every five minutes. This slag is received in cast iron pots where it is allowed to solidify before being turned out. The slag is almost entirely free from lead, and contains only a trace of silver, so that practically it may be considered clean. The bars of silver are now taken to the cupelling furnace. This is in appearance not unlike a very short reverberatory furnace with a very large grate; but instead of the usual bed are a couple of bars, on which is supported the cupellor, as it is usually called, the "test."

The Test

consists of an elliptical frame of wrought iron, filled in with bone ash well beaten, and hollowed out to the requisite shape by means of special tools for that purpose. At the back of the furnace are two holes, one where the blast pipe enters, and the other for introducing the rich bars into the test. The test, which is placed with its long axis towards the blast, is left a little thicker at the opposite end where the litharge flows over. When the test has been raised to a good heat, a sufficient quantity of the rich lead is introduced, and the whole speedily melts, and the blast is now turned on. The oxygen of the air composing the blast oxydizes the lead into litharge, and this takes up all foreign metals. A portion of the litharge is absorbed by the test, but much the larger quantity flows over the end of the test furthest from the blast, and is received in iron pots mounted on wheels, which are moved as fast as filled. The rich lead is continually added until all has been oxydized, and the silver is now pure, containing only the gold in the bullion. If, however, there should happen to have been more copper in the enriched alloy than could be carried off by the lead contained in it, (which is shown by the appearance of greenish spots floating on the silver,) this can be easily removed by the addition of a little more pure lead to the test.

Immediately on the termination of the cupellation a very beautiful phenomenon is seen, which is termed the "brightening." Just as the last trace of lead clears from the silver a peculiar bright and vivid flash seems to cover the whole bath of metallic silver, and for an instant every brick in the arch of the furnace is reflected as plainly as in a mirror.

A series of ingot moulds set in a frame are then run under the test, and a hole bored into the bottom of the test, through which all the silver runs into the moulds.

These ingots are now taken to the crucible house, and about 35 lbs. weight put into a plumbago crucible and melted. A little charcoal is thrown into the crucible, and the whole stirred with a stick. After skimming off the coal, and any little slag which may have formed, the metal is poured into ingot moulds of the requisite size, and the silver, which is now fine, is after assay stamped with its degree of fineness.

This finishes the whole operation, as the gold and silver are not separated at these works, but sold as an alloy.

Owing to the fact that all these operations are not proceeding at one and the same time, the number of men employed is comparatively small, (being only thirty-five) when the large amount of work done comes to be considered.

Cost of the Works, &c.

These works have been erected, not only with a view to convenience, but also to economy, the whole establishment, together with the purchase of the land, (twenty-five acres) having cost not more than fifty-eight thousand dollars. It may be remarked here, that the total loss of lead in all these operations does not amount to more than 2½ per cent.

Our thanks are due to Mr. Sieger, the able and efficient superintendent of the works, as also to Mr. Billing, the manager, for affording us every facility in their power to enable us to make a thorough investigation, and also giving us all the information we could desire to give a description commensurate with the importance of this new and inestimable enterprise.

ORE SAMPLING WORKS.

These works were brought into existence from a want of some means of equitable arrangement between the seller and buyer of ores; as no two samples made by different interests would agree, with any accuracy, thereby causing mutual distrust and delay, each believing his own sample to be the correct one.

The first public sampling place was started by Geo. I Johnson, Esq., of Boston, in the California corral, on Second South street, Salt Lake City, where the sampling was performed by hand, no machinery being at that time erected. Ore, in lots of five tons and upwards, was brought to the corral and sampled, purchase or refusal being at the option of the sampler.

Howland's Mill.

These were the first complete sampling works erected in the Territory, and are situated at the corner of the block due south of the U. C. R. R. Depot, and contain an engine of twenty horse power, which communicates motion to a "Howland Crusher, and a Burr stone mill. The whole of the machinery, together with a spacious sampling floor and private office being under one roof. This mill was erected by Messrs. S. W Howland & Co. of San Francisco, in the winter of 1870, and was by them sold about the fall of 1871, to W. T. Richmond, Esq., of Chicago, who is the present owner. During the last summer it was leased by him to R. Macintosh, Esq., of this city, who now carries on the business.

Salt Lake City Sampling Mill.

This mill is situated on the west side of the U. S. Railroad track at the corner of 4th South and 3d West streets, and was built in June, 1871, by Geo. J. Johnson, Esq., who formed a business co-partnership with Messrs. James Lewis & Son of Liverpool, the firm assuming the name of Lewis, Johnson & Co. The machinery consists of a fifteen horse power high pressure engine by J. C. Hoadley of Boston, a Brodie crusher and a French burr-stone mill. The building, which is under one roof, consists of a spacious sampling floor 60 x 40 feet, an engine room, private office, assay office, and laboratory. Since last summer the business has been carried on by Mr. Johnson alone. This mill has a side track from the U. S. R. R., and spacious platorms for the reception of ores.

H. S. Jacobs & Co's Sampling Works

Are situated one block north of the above, and on the eastern side of the railaoad, with a side track for loading and unloading ores. The machinery consists of a very finely finished stationary engine and a Dodge crusher. The sampling floor, engine room and office are in one and the same building. These works were erected in June, 1871, by H. S. Jacobs & Co., of Pennsylvania, and during the early part of last summer passed into the hands of Messrs. Baxter & Co., who converted them into amalgamation works; having erected two pans with the usual attendant machinery.

At Sandy Station.

Messrs. Gordon & Murray, and Messrs. Durant & Cutting connect with their forwarding business the sampling of ores and bullion.

Method of Sampling.

In sampling rich milling ores the whole bulk is usually crushed; but with poor milling ores, galena and copper ores, one-fifth of the bulk is generally operated upon. The ore, after having been crushed, is thoroughly mixed and spread out evenly on the sampling floor. It is then, by a succession of what is termed "quarterings," reduced to a bulk of about two bushels. This is further pulverized by hand with "buckers" on an iron plate, until it will all pass through a one-eighth inch seive. This is again thoroughly mixed and reduced by repeated quarterings to about the quantity of sample required by the buyers and sellers; say sufficient to fill four 4-ounce sample bottles.

The pulverized ore is now reduced either in a mortar or by "bucking" irons, to a state of division fine enough to enable it to pass through a seive containing from fifty to sixty meshes to a linear inch. The sample is again thoroughly mixed and put into the bottles, which are sealed and labeled with the number of sacks, weight of ore, date of sampling, and of sale. Owing to the great difficulty experienced in perfectly cleaning the burr-stone mills, they had to be abandoned, as it was found almost impossible to remove the whole of the previous sample, the fine particles of which lodged in the joints, etc., of the machine, thereby being liable to cause serious error, by portions of a previously crushed rich sample becoming mixed with a succeeding poor one, and *vice versa*.

THE RAILROADS OF UTAH.

The Utah Northern Railroad

Is a three feet narrow guage road, and was organized in August, 1871, with a capital of $2,500,000. President and general Superintendent, John W. Young; Secretary, Moses Thatcher. Work on the road was commenced immediately after the organization. The road commences five miles south of Brigham City, in Box Elder county, and sixteen miles north of Ogden, at a point on the C. P. R. R., called Utah Northern Junction. About forty miles of the road were completed and in running order on the first day of January, 1873. The ultimate destination of the road is Soda Springs, in Oneida county, Idaho, one hundred and twenty-five miles from Ogden. There are therefore eighty-five miles yet to be constructed.

The Summit County Railroad

Is also a three feet narrow gauge road and was organized November 27, 1872, with a capital of $660,000; President, Joseph A. Young, who is also general Superintendent; Secretary, John H. Hellsbrom. Work on the road was commenced immediately after organization.

The road commences at Echo, Summit Co., on the U. P. R. R., and will run to the coal mines at Coalville, from thence it will follow the course of the Weber river to its junction with Silver Creek, at Wanship, and from thence up the creek to the mining district adjacent to Parley's Park, in all a disdistance of about thirty miles. Two miles of the road are already completed. Rails, ties, engines and cars are all on the ground.

The Utah Central Railroad.

This road was organized in the spring of 1869; Brigham Young, president; John Sharp, superintendent. Ground was broken at Ogden in May, 1869. The road connects Ogden with Salt Lake City; distance, thirty-seven miles. Track-laying commenced September, 23d, and the road was completed January 10th, 1870, costing about $1,500,000. As a business enterprise this road has proved a remarkable success.

The Utah Southern Railroad.

Organized January 17th, 1871,. Capital stock, $1,500,000. Brigham Young, president; John Sharp, superintendent. Ground was broken May 1st, 1871. The road commences at the Utah Central depot and the terminus fixed upon at present is Payson, Utah county, seventy-five miles south of Salt Lake City; but eventually the road will be continued south to the headwaters of the Colorado river and connect with the Southern Pacific railroad, whose western terminus will be at the barbor of San Diego, Southern California. Forty miles of the road are already completed and in full running order to Lehi, Utah county. This road will be of inestimable value in the development of the agricultural and mineral resources of the Territory, constituting as it will, a grand trunk from which will branch various roads to the different mining districts in the ranges of mountains east and west of it. Along the line of road at convenient points extensive smelting and separating works also sampling mills have already been erected, and many others are projected and will shortly be commenced.

The Wasatch and Jordan Valley Railroad.

President............Wm. Jennings.
Secretary............Frank Fuller.

This road was organized on the 24th day of October. 1872. The capital is $500,000, and is all subscribed. Seventy-five thousand dollars have been already paid in and about 70,000 expended. The heaviest stockholders are the officers of the Emma Mining Co. in Little Cottonwood.

The road is to run from Sandy Station on the Utah Southern Railroad to Alta in Little Cottonwood Canyon. It will be a double track road from Sandy to the mouth of the Canyon, one track being 4 feet 8½-in. gauge, and the other 3 feet. The gauge up the Canyon will be 3 feet. The line has been located the entire distance, and every provision has been made to render the road secure against accidents from snow slides.

The grading from Sandy to the mouth of the Canyon, seven miles, is nearly completed, the ties are on the ground, and track-laying will be commenced immediately, the iron having been delivered. The locomotives and rolling stock have been ordered, and it is contemplated to have the road in operation to Granite at the mouth of the Canyon early in February. It will then be pushed up the Canyon as rapidly as possible, and is expected to be completed during the coming season.

The Bingham Canyon and Camp Floyd Railroad,

Incorporated September, 1872. Capital stock $300,000 which at the time of organization was all taken up and ten per cent. paid in. The destination of road has since been extended and capital increased, and assessments of 30 per cent. have been levied and paid. Between seven and ten miles of the grading is already done, and the ties for the first fifteen miles of the road are now on the ground. The iron and engines are ordered, and will be ready for track laying by the 1st of March. The enterprise was conceived by Hugh White, Esq., who is President of the road, and the heaviest stockholder; the balance of the stock is divided between Walker Bros., B. N. Baskin, Esq., and other leading business men in Salt Lake City. The road is expected to be in active operation from Sandy Station on the U. S. R. R. to Bingham City by the 1st of April next, and work on the balance will be pushed as fast thereafter as men and money can do it. The gauge from Sandy Station to the Jordan River, where the largest and most extensive smelters of the Territory are now being built, will be 4 feet 8 inches with a third rail, and thence westward will be a three feet guage. The completion of this road will be of incalculable benefit to the mines in Bingham Canyon, as there is a plethora of low grade ores which are now comparatively worthless, but can be turned to profitable account when proper facilities for transportation and manipulation are afforded.

The line of traverse will be as follows: Sandy Station to Bingham, thence to Tooele City, thence to Stockton, thence to Ophir and thence to Camp Floyd.

The American Fork Railroad.

This road was incorporated the 3d of April, 1872, with a capital stock of $300,000. The President is J. Lloyd Aspinwall, Esq., of New York, and Edmund Wilkes, Esq. of Salt Lake City is the Manager. Acting Local Secretary, John F. Lowell, Esq. Ground was broken and operations actively commenced on the 20th of May, 1872. By the 10th of October following, sixteen miles of road were completed, reaching Deer Creek, and there are now only five miles more to build, the terminal point being the Sultana Smelting Works, belonging to the famous Miller mine, which is owned by the stockholders of the railroad.

The road is a narrow three-feet gauge. The grade is very heavy, the maximum being 297 feet to the mile, and the radius of one of the curves is 229 feet. The road is being run by a Farlie engine, and is expected to be completed by May next, or so soon as the melting of snow will permit of operations being resumed.

Salt Lake, Sevier Valley and Pioche Railroad.

Organized in May, 1872. Capital stock, $3,000,000. John Leisenring, president; H. S. Jacobs, vice-president and treasurer; E. M. Barnum, secretary.

This road is intended to go by way of Lake Point (Clinton's); thence to Tooele City, Stockton, and through the Rush and Sevier valleys to Pioche. It will pass near to East Canyon, Lewiston, Tintic, San Francisco and other mining camps in the western part of the Territory.

Work on the road has not yet been commenced.

The Salt Lake and Tooele Valley Railroad.

Organized December 16, 1872. Capital stock $2,000,000.

This project has been started under the auspices of John W. Young, Esq., assisted by eminent Eastern capitalists. The route is the same as that chosen by the Salt Lake, Sevier Valley and Pioche Railroad Company. The extent of road will be about one hundred miles. Surveys have been made to Clinton, at the point of mountains in Tooele county, and ground was broken immediately after incorporation.

The Juab, San Pete and Sevier Railroad,

Organized in September, 1872. Capital stock, $1,500,000. Track, three feet narrow gauge. Officers, Brigham Young, president; David McKenzie, secretary; Joseph A. Young, superintendent and chief engineer; C. L. Ericsson, assistant engineer.

The road will connect with the U. S. Railroad at Nephi and go through Salt Creek canyon, thence in a south-easterly direction with branches to the different coal beds in the vicinity. The total length including branches will be about 150 miles. Nearly the whole length has been surveyed and located. Contracts for grading and ties have been made and work will be commenced early in the spring.

The Lehi and Tintic Railroad,

Organized in November, 1872. President, Hon. W. H. Hooper. Capital, $1,000,000. It will start from Lehi on the U. S. Railroad and run westerly to the vicinity of the Camp Floyd mining district; thence southwest over the divide to the vicinity of Eureka, East Tintic, mining district. A branch is to be built to Ophir and Stockton. The length of the road will be about fifty miles. A preliminary survey has been made by L. H. Shortt, Esq., late engineer on the California Pacific Railroad, who declares the route to be a feasible one, the grade at no point exceeding 120 feet to the mile. Work will be commenced at once and prosecuted with vigor to completion. The road is to be a three-feet gauge and the plan is to continue it southward to Pioche, at as early a date as possible; General Page, president of the Bullionville and Pioche Railroad, is a stockholder and one of the directors of this road. The work of construction will be done by Mr. Palmer, the engineer of the last-mentioned road. Among the subscribers to the capital stock are several prominent gentlemen of New York, St. Louis, New Orleans, and California.

The capital required has all been subscribed.

The Southeastern Railroad,

Organized in October, 1872. Capital stock $2,000,000. President William Jennings, Esq., Is to be a narrow gauge road, and will run from a point on the Utah Southern railroad, near Springville, through Spanish Fork to Sanpete. It is designed to accommodate the thriving settlements of that section, and also to develop the extensive coal fields of the Sanpete Valley. The length of the road will be about one hundred miles. The surveyors are now in the field engaged in locating the line. Contracts for grading will be let during the present month, and the work will go forward to rapid completion. After reaching the Indian Reservation in Sanpete Valley, it is contemplated to continue the road southwestwardly down the Sevier river to accommodate the numerous and growing mining districts in Beaver county, with a probable future terminus on the Nevada line, not far from Pioche.

REAL ESTATE.

The following synopsis of the past and present position of real estate matters has been furnished by Messrs. True, Burns & Martin of this city, a firm engaged in buying and selling real estate on commission:—

Notwithstanding the great demand for capital to be used in developing the mineral resources of Utah, the transfers of real estate in one ward alone in Salt Lake City have been over $75,000 in one month during the past year.

The increased value of real estate since railroad communications have been established, may safely be stated at above *three hundred per cent.*

When it is considered that but few mines are as yet developed sufficiently to produce an equivalent for the amount expended in sinking shafts, etc., thus locking up millions of dollars, the large number of transfers of real estate that have been made is remarkable.

During the present year it is almost certain that many more mills and reduction works will be erected and, as we have every reason to believe they will be productive, capital will naturally look for other investments.

Assuming that the mines of Utah are successful and that Salt Lake City will ere long become the great commercial centre between the Rocky Mountains and the Sierra Nevadas, it is therefore not surprising that the value of real estate should have risen so rapidly in so short a period.

At present any amount of money can be borrowed from banks and private individuals, if town lots, ranches or farming lands are the basis of security, and the extraordinary rate of *three per cent. per month* has in some instances been paid for accommodations running over very limited periods.

We append such statistics as are available:

Nunber of transfers in Salt Lake county during the year 1872, eleven hundred and forty-seven.

Valuation	$508,753
Total valuation of real estate in the same county, as per Territorial Auditor's last report	$7,694,908
Total value of assessable property in the whole Territory, from the same authority	$17,590,560

Transfers of Mining Property and Real Estate, Consideration, Powers, of Attorney, Agreements and Acknowledgments.

Messrs. Stainburn & Gould, Notaries Public and Conveyancers, successors to A. S. Gould & Son, the oldest firm in the Territory, have furnished the following statement:

Number of transfers at their office from September 24, 1870, to January 1, 1873	9,840
Value of consideration expressed in deeds	$22,970,540
Powers of Attorney	5,643
Agreements	1,754
Acknowledgments	15,787

BANKS AND BANKING.

There are six Banking establishments in Salt Lake City. Three of them are National Banks and the others private institutions. The former are:

The First National Bank of Utah, Warren Hussey, Prest.; A. Godbe, Cashier. This bank is the designated depository and Financial agent of the United States. It is the oldest Banking Institution in Utah. The authorized capital is $500,000, of which $150,000 is paid up. It does the largest banking business.

Salt Lake City National Bank,

Benj. M. DuRall, President; Hugh White, Cashier. Authorized capital, $500,000.

Deseret National Bank.

Authorized capital, $1,000,000; paid up capital, $200,000. Brigham Young, President, L. S. Hills, Cashier.

The private Banking firms are:
Messrs. Wells' Fargo & Co.,
" A. W. White & Co., and
" Walker Brothers.

The following was the amount of deposits in the various banks, with the aggregate value thereof, on the 31st day of December, 1872.

Individual deposits of private bankers as per returns for the month of December, 1872:

Wells, Fargo & Co.,	$215,120 57
A. W. White & Co.,	181,833 21
Walker Bro's,	72,000

Individual deposits of National Banks as per reports of December 27th, 1872:

First National Bank of Utah,	$455,410 94
Deseret National Bank,	219,155 12
Salt Lake City National Bank,	70,320
Total,	$1,213,839 84

TELEGRAPH LINES.

The Western Telegraph Company

Has its office in Salt Lake City connecting with Ogden City and from thence east and west.

Deseret Telegraph Company.

Central office, Salt Lake City, with branches at all principal points throughout this Territory.

IMPORTS AND EXPORTS.

Returns of the Utah Central Railroad.

FREIGHT INWARD.

JANUARY.

Merchandize (assorted) lbs	2,401,553
Coal, lbs	5,741,120
Lumber, ft	321,170
Produce, lbs	979,408
Machinery, lbs	193,243
Stock, lbs	40,000
Wagons lbs	24,000
Ore, lbs	160,000

FEBRUARY.

Merchandize, lbs	1,394,932
Coal, lbs	5,613,800
Lumber, ft	1,111,030
Produce, lbs	445,807
Machinery, lbs	91,946
Stock, lbs	20,000
Wagons, lbs	108,360
Ore, lbs	160,000
Building material, lbs	20,000

MARCH.

Merchandize, lbs	3,479,134
Coal, lbs	3,352,938
Lumber, ft	1,456,395
Ice, lbs	320,000
Railroad material, lbs	441,460
Produce, lbs	1,057,960
Machinery, lbs	158,417
Stock, lbs	260,000
Wagons, lbs	296,500
Ore, lbs	44,800

APRIL.

Merchandize, lbs	2,480,180
Coal, lbs	3,939,840
Lumber ft	2 364,453
Sundries, lbs	849,600
Railroad material, lbs	90,910
Produce, lbs	1,999,708
Machinery, lbs	80,000
Stock, lbs	428,560
Wagons, lbs	178,000
Ore, lbs	60,000

MAY.

Merchandize, lbs	3,442,161
Coal, lbs	3,762,300
Lumber, ft	3,771,732
Sundries, lbs	737,600
Produce, lbs	1,371,364
Machinery, lbs	117,838
Stock, lbs	61,000
Wagons, lbs	280,000
Ore, lbs	120,000

JUNE.

Merchandize, lbs	3,489,351
Coal, lbs	4,076,800
Lumber, ft	2,664,982
Railroad material, lbs	591,850
Produce, lbs	2,465,426
Machinery, lbs	174,882
Stock, lbs	180,000
Wagons, lbs	202,000
Ore, lbs	547,200

JULY.

Merchandize, lbs	3,701,463
Coal, lbs	4,120,000
Lumber, ft	2,542,556
Ore, lbs	561,600
Railroad material, lbs	2,822,820
Produce, lbs	1,528,093
Machinery, lbs	90,000
Stock, lbs	20,000
Wagons, lbs	284,100
Ice, lbs	60,000

AUGUST.

Merchandize, lbs	2,885,848
Coal. lbs	4,833,410
Lumber, ft	2,756,740
Ore, lbs	804,800
Railroad material, lbs	1,520,530
Produce, lbs	705,015
Machinery, lbs	60,000

Stock, lbs.	322,000
Wagons, lbs.	304,000
Ice, lbs.	180,000

SEPTEMBER.

Merchandize, lbs.	3,196,761
Coal, lbs,	6,405,300
Lumber, ft.	4,857,838
Ore, lbs.	784,000
Rairoad material, lbs.	359,861
Produce, lbs.	1,054,391
Machinery, lbs.	31,500
Stock, lbs.	260,300
Wagons, lbs.	365,800
Sundries, lbs.	200,000

OCTOBER.

Merchandize, lbs.	4,578,255
Coal, lbs.	7,499,250
Lumber, ft.	3,538,750
Ore, lbs.	1,707,600
Railroad material, lbs.	766,202
Produce, lbs.	1,950,009
Machinery, lbs.	208,531
Stock, lbs.	94,000
Wagons, lbs.	357,950

NOVEMBER.

Merchandize, lbs.	4,358,831
Coal, lbs.	10,059,300
Lumber, ft.	3,538,780
Ore, lbs.	1,092,200
Railroad material, lbs.	743 098
Produce, lbs.	1,072,503
Machinery, lbs.	215,332
Stock, lbs.	161,500
Wagons, lbs.	344,700
Building material, lbs.	340,600

DECEMBER.

Merchandize, lbs.	3,300,937
Coal, lbs.	15,393,401
Lumber, ft.	3,110,400
Ore, lbs.	877,349
Railroad material, lbs.	791,430
Produce, lbs	1,893,419
Machinery, lbs	76,500
Stock, lbs.	115,325
Wagons, lbs.	471,000
Building material, lbs.	174,730

Recapitulation.

Merchandize, lbs.	38,709,406
Coal, lbs	74,797,459
Lumber, ft	32,034,826
Produce, lbs.	16,523,103
Machinery, lbs.	1,498,189
Stock, lbs.	1,962,685
Wagons, lbs.	3,216,410
Ore, lbs.	6,419,549
Building material, lbs.	534,730
Railroad material, lbs.	8,128,161
Ice, lbs.	560,000
Sundries, lbs.	1,787,200

FREIGHT OUTWARD.

JANUARY.

Ore, lbs.	2,180,000
Bullion, lbs.	640.000
Merchandize, lbs.	130,897
Sundries, lbs.	37,703
Peaches, lbs.	40,000
Hides, wool, pelts, and tallow, lbs.	83,844
Salt, lbs.	40,000
Building material, lbs.	42,710

FEBRUARY.

Ore, lbs.	660,000
Bullion, lbs.	209,853
Merchandize, lbs.	360,000
Sundries, lbs.	20,000
Peaches, lbs.	43,768
Hides, wool, pelts and tallow, lbs.	61,140

MARCH.

Ore, lbs.	1,160 000
Bullion, lbs.	400,000
Merchandize, lbs.	239,017
Sundries, lbs.	46.100
Peaches, lbs.	40,000
Stock, lbs.	40,000
Hides, wool, pelts and tallow, lbs.	36,677

APRIL.

Ore, lbs.	740,000
Bullion, lbs.	640,000
Merchandize, lbs.	208,979
Peaches, lbs.	58,000
Hides, wool, pelts and tallow, lbs.	40,257

MAY.

Ore, lbs.	1,480.000
Bullion, lbs.	440,000
Merchandize, lbs.	264,609
Sundries, lbs.	40,000
Peaches, lbs.	20,000
Hides, wool, pelts and tallow, lbs.	46,028

JUNE.

Ore, lbs.	720,400
Bullion, lbs.	660,000
Merchandize, lbs.	279,524
Sundries, lbs.	47,050
Hides, wool, pelts and tallow, lbs.	184,436

JULY.

Ore, lbs.	863,103
Bullion, lbs.	1,120,000
Merchandize, lbs.	244,568
Hides, wool, pelts, and tallow, lbs.	156,042

AUGUST.

Ore, lbs.	1,896,376
Bullion, lbs.	1,364,000
Merchandise, lbs.	225.532
Sundries, lbs.	20,000
Stock, lbs.	20,000
Hides, wool, pelts and tallow, lbs.	45,476
Produce, lbs.	23,309

SEPTEMBER.

Ore, lbs.	3,057,244
Bullion, lbs.	1,363,000
Merchandise, lbs.	75,388
Sundries, lbs.	289,628
Peaches, lbs.	60,000
Stock, lbs.	245,500
Produce, lbs.	10,250
Buildng material, feet.	59,000

OCTOBER.

Ore, lbs.	4,196,969
Bullion, lbs.	1,440,000
Merchandise, lbs.	413,090

Sundries, lbs	80,000
Stock, lbs	57,500
Hides, wool, pelts and tallow, lbs	60,368
Produce, lbs	103,561
Building material, feet	3,600

NOVEMBER.

Ore, lbs	2,680,000
Bullion, lbs	1,230,000
Merchandize, lbs	405,725
Sundries, lbs	129,408
Wool, hides, pelts and tallow, lbs	83,775
Produce, lbs	20,000

DECEMBER.

Ore, lbs	1,060,000
Bullion, lbs	1,560,000
Merchandize, lbs	276,978
Coal, lbs	21,010
Lumber, ft	25,260
Machinery, lbs	22,500
Stock, lbs	22,000
Wagons, lbs	21,450
Wool, hides, pelts and tallow, lbs	91,150
Sundries, lbs	20,000
Produce, lbs	45,115
Lead, (pure) lbs	180,000

Recapitulation.

Ore, lbs	20,693,692
Bullion, lbs	11,066,853
Merchandize, lbs	3,124,307
Sundries, lbs	729,889
Peaches, lbs	261,768
Stock, lbs	385,000
Wool, hides, pelts and tallow, lbs	889,193
Salt, lbs	40,000
Produce, lbs	202,235
Building material, ft	104,710
Coal, lbs	21,010
Lumber, ft	25,260
Machinery, lbs	22,500
Wagons, lbs	21,450
Pure lead, lbs	180,000

The following was forwarded by express through Wells, Fargo & Co:

Silver Bars	170,191
Gold Bars and Dust, oz	5,556

VALUE OF IMPORTS AND EXPORTS.

Among these the following are the only ones on which a calculation can be made so as to arrive at an approximate value:

Imports.

Coal, lbs. 74,797,459; average value per ton $9		$336,600
Lumber, feet, 32,034,526; 4-5 @ $40 per M	1,025,114	
1-5 @ $65 per M	466,452	
Total value		1,441,566
Ass'd Merchandise, lbs., 38,709,406 average value per lb. 27¼c		10,548,313

Exports.

Ore, lbs., 20,693,692; average value $88 per ton	$910,536
Bullion, lbs., 11,066,853; average $240 per ton	1,328,022
Lead, lbs., 180,000 @ 5c per lb	9,000
Silver Bars, oz., 170,191; average value, $1.18 per oz	200,333
Gold Bars and Dust, oz, 5,556 @ $18 per oz	100,000
Wool, lbs., 388,693, @ 43c per lb	17,200
Tallow, lbs., 85,000, @ 7½c per lb	7,500
Hides, 6,258 @ $4.25	26,596
Pelts, 8,000 @ 50c	4,000
Peaches, lbs, 261,768 @ 20c per lb	52,353

MANUFACTURING AND MECHANICAL INDUSTRIES.

Planing Mills.

There are three planing mills in Salt Lake City.

Messrs Latimer, Taylor & Co. are proprietors of one; they do custom work, and also work on their own account to fill the requirements of their associates Messrs. Folsom and Romney, who are extensive builders and manufacturers of building materials.

H. Dinwoody, who is the largest dealer in and manufacturer of household and office furniture, has also a planing mill attached to his factory. This mill does some custom work also.

Messrs. Oakey & Johnson have also a mill, which is altogether run for custom work.

Woolen and Cotton Mills.

There are eight mills in the Territory located as follows:

Ogden Woolen Mill,

Ogden City, Weber County. Alfred Randall, Superintendent.

Brigham Woolen Mill,

Brigham City, Box Elder County. Jas. Bywater, Superintendent.

Wasatch Woolen Mill,

Four miles south of Salt Lake City. James McGee, Superintendent.

Deseret Woolen Mill.

Four miles south of Salt Lake City. J. W. Cummings, Superintendent.

Grantsville Woolen Mills,

Grantsville, Tooele County. Wm. Jeffrey's, Superintendent.

Springville Cotton Mill.

Springville, Utah County. Jacob, Hontz, Superintendent.

Provo Woolen Mills,

Provo City, Utah County, are very extensive and when complete will have 3,240 spindles

9 sets of cards and 95 looms. The whole cost will be about $250,000. A. O. Smoot, Superintendent.

Beaver Woolen Mills,

Beaver City, Beaver County. Wm. Fotheringham, Superintendent.

Rio Virgin Woolen and Cotton Mills,

Near Washington, Washington County. Joseph Birch, Superintendent.

Paper Mills.

The Deseret Paper Mills, situated three miles south of Salt Lake City, manufactured during the year 1872, the following:

1782 reams news printing, weighing 64,052 lbs.
734 " wrapping paper, " 8,364 "

Salt Works.

Large works have been erected for the manufacture of salt, of both fine and coarse qualities. Some six hundred tons were manufactured by Mr. F. A. Mitchell, in expectation of reduced rates of freight on the U. P. R. R., but in consequence of the rate demanded it has been found impossible to compete with Eastern markets, and there is consequently some five hundred tons on hand.

Boot and Shoe Manufactories.

Zions Co-operative Mercantile Institution has two factories of the above class. One at Brigham City, Box Elder county, and another in Salt Lake City. At the latter place, during the year 1872, there were turned out about 2,400 pairs of boots and 6,600 pairs of shoes, the total value of which was close upon $50,000. About forty hands, men and women are employed.

Breweries.

There are five Breweries in Salt Lake City and vicinity, their names are

California Brewery.

Mouth of Emigration Canyon, four miles from the city. Lager Beer, Ale and Porter, Henry Wagener, Proprietor.

Philadelphia Brewery.

Mouth of Parleys Canyon, seven miles from the city. Lager Beer. Joseph Dudler, Proprietor.

Montana Brewery.

Four miles north of the city on the old wagon road to Ogden. Lager Beer. Moritz & Hermann, Proprietors.

Eddin's Brewery.

On the State road three miles south of the city. Lager Beer. John Eddin, Proprietor.

Margetts Brewery.

Situated in the 19th. Ward, Beer, Ale and Porter. Richard B. Margetts, Proprietor.

CHARCOAL BURNING.

The charcoal used for smelting purposes is obtained from the timber bearing portions of the canyons and mountain ranges, and prepared chiefly in pits upon the grounds adjacent. During the past year the construction and operation of a number of charcoal kilns or ovens for charring, has been inaugurated by Major Edmund Wilkes, at the smelting works of the Miller Mining Company, in American Fork Canyon, where there is an abundance of suitable timber. The kilns are constructed of substantial masonry, either of stone or brick, the last mentioned being preferred. They are in form like a semi-gothic dome, and resemble an old-fashioned bee-hive, from this similarity they are known as "The Bee-hive Charcoal Kilns." They are the invention of J. C. Cameron, Jr., a mining engineer, who introduced them first in the Charcoal Iron Manufacturing region of Lake Superior, Michigan, and Northern Wisconsin, subsequently in Northern New York, and other districts. M. R. Hunt, Esq., Secretary of the National Iron Company of Wisconsin, one of the largest iron works in that State, in writing of them, says: They are superior to any charcoal kilns now in use, affording a saving in construction over the rectangular form 50 to 75 per cent.; in cost of manufacture 25 to 50 per cent., and a very favorable profit in quality and quantity of coal produced, while over the pit process they possess very decided advantage. During the winter season, when snow abounds, they can be worked with almost as great economy as during the summer months. The construction of a large number are contemplated by parties now engaged in furnishing our smelting works with charcoal at the most favorable points along the lines of the Central and Union Pacific Railways, the advantages of which will result in a constant supply of that essential element in our smelting works, which are rapidly becoming more numerous.

The kilns erected in American Fork Canyon have given entire satisfaction, and are in every particular a success. They were built under a contract by Evans & Morris, of this city, who have the inventors right to build in Utah, Nevada and California.

SALT LAKE IRON COMPANY

Is a company incorporated in New York, Charles Roome, President, Henry I. Davison, Sec'y and Treas., L. V. Sutherland, Manager.

They do iron and brass castings, manufacture mining and milling machinery, engines, boilers and agricultural machinery.

At present there is only one blast furnace of a capacity of 10,000 pounds, but another will shortly be added.

Active operations commenced only about a month ago.

NEW BUILDINGS AND IMPROVEMENTS.

No better evidence of confidence in the future of Utah can be adduced than the numerous buildings, both of a public and private character, which have been erected during the past year. The want of suitable hotel, domestic and commercial accommodations for the vast influx of visitors, permanent residents, and space in which to transact the rapidly accumulating business of the Territory, has caused Salt Lake City to be perfectly metamorphosed in its appearance.

Among the most prominent additions to the architecture of the city may be named: the

Walker House,

built and owned by Walker Bros., a four story brick building, a very imposing structure, situated on the west side of Main street, between Second and Third South streets. It has a frontage of eighty-two feet with a depth of one hundred and twenty feet. It contains one hundred and thirty-two rooms, and is fitted up with all the modern conveniences and luxuries. Private gas works light the establishment, and bath rooms supplied with hot and cold water are on every floor. The furniture and fittings throughout are of the newest and most costly styles and patterns, and compare favorably with the grandest hotels east or west. The cost of the building alone was $125,000, Messrs. H. S. Greeley & Co. are proprietors.

The First National Bank of Utah,

Main st, and nearly opposite to Walker Bros' store. This building is not yet complete, and will not be ready for occupation until the spring. It has a frontage of 33 feet and runs back 108 feet, is four stories high, with a Mansard roof. The basement and first story are built of stone and the upper ones of brick, and it has a handsome iron front. When completed it will be the handsomest building in the City. Its cost will be $80,000. Mr. Warren Hussey, President of the bank, is sole owner, having erected the same for a permanent investment. Designer of Iron front, R. M. Upjohn of New York. Architect of building proper, T. J. Johnson.

The Clift House,

Also intended for a hotel, is on Main street at the corner of Third South street. The basement is built of rock and the upper stories of brick. It is four stories high, inclusive of a Mansard roof. The dimensions are 42 feet front with a depth of 135 feet, making an actual frontage of 175 feet.

The building will be completed for occupancy in March next, and cost when finished about $75,000 including land.

Clift Place

Is a row comprising six substantial brick houses two stories high with a Mansard roof. There are eight rooms in each house. The row is 120 feet in length and 44 feet deep, so that each house is 20 by 44 feet. The cost was about $30,000.

The Clarendon House,

Also the property of Mr. Clift, has been remodeled as a lodging-house at an outlay of about $5,000. It is also on Main street a few doors north of the Clift house.

The Great Western Hotel,

On Second South street at the corner of First East street, has had large additions made to it, and been decorated both internally and externally. The cost of improvements exceeds $10,000. This hotel is also owned by Mr. Clift.

St. Mark's Episcopal Church

Is a very handsome gothic edifice, situated on First South street, between Second and Third East streets.

The building is of stone, and the internal fittings are very chaste and appropriate.

The cost was about $50,000; Rt. Rev. D. S. Tuttle, D. D., Rector; Rev. R. M. Kirby, Assistant Rector.

St. Mark's School House,

Connected with the Church of same name, is a large and commodious frame building of very tasteful design, and admirably adapted for the purposes intended. Its dimensions are about 40 feet by 120 feet, and two stories high.

It is fitted with every convenience and requisite for the comfort, order, cleanliness, healthfulness and work of the school. The cost was about $25,000. The location is on First South street, opposite the City Hall.

The Rev. Thos. W. Haskins, Principal, and Miss J. H. Van Rensselaer, Vice-Principal.

The total number of pupils, male and female, is 310.

Zions Co-operative Mercantile Institution, (Addition.)

Mr. William Jennings, owner of the property occupied by the above institution, has just completed a mammoth addition, three stories high, and measuring 120 feet front, by 100 deep. The building is very substantial in all its details, and is intended for the wholesale department and counting-house accommodation. The building is of brick, and no pains or expense have been spared in its erection. The cost is in the neighborhood of $65,000.

It is situated on First South street, and adjoins the retail department, which is on the corner of the same street and Main street. Folsom & Romney, Architects.

Cisler's Building,

A three-story brick building immediately opposite the Clift House. The dimensions are 25 by 75 feet. There is a fine basement running the whole length. A store not yet occupied on the ground floor, offices and rooms on the second floor and a large hall above used for a skating rink. Cost of the building $12,000. Frank Cisler, proprietor.

Groesbeck's Block.

A handsome three-story block built of wood above the basement, which is of stone, 80 x 80 feet. The lower floors are devoted to stores, of which there are four, and the upper floors are used as warehouses and offices. Cost about $35,000. Folsom & Romney, Architects.

Trowbridge's Building

Is situated in the middle of the block on Main street between 1st South and 2d streets. It is a well-built brick building three stories high with a frontage of 29 feet and 75 feet deep. On the ground floor is the office of the Salt Lake National Bank, the second floor is rented for law and other offices, and the third floor is occupied by the Masonic fraternity. At the back of the building is a large billiard hall 100 feet deep, containing 14 tables. It is one of the finest billiard rooms west of the Rocky Mountains. The whole building is lighted with gas made on the premises. Charles Trowbridge is proprietor. The building cost a little over $35,000.

Grenig's Building.

A tastefully finished brick building, two stories and basement, situated on Main street, two doors from the First National Bank new building. The basement is a restaurant; the first floor is occupied as a store by Mr. Grenig, the proprietor, and the upper floor as lawyers' offices. The building cost about $12,000.

A. W. White & Co's Bank

Is a substantial two-story brick building, about four doors south of Trowbridge's building. It is now in course of construction, and will be ready for occupation in February next When finished the cost will be about $20.000. Folsom & Romney, Architects.

Methodist Episcopal Church.

This edifice is not yet completed, only the ground floor having been finished. The building is of brick, and has a frontage of seventy-three feet with a depth of 103 feet and fourteen feet from floor to ceiling, over which a temporary roof has been constructed.

The structure is cruciform in shape, and has cost, so far, $20,000. It is situated on Third South street, between Main street and the State road. A main auditorium will be erected over the present floor, which will be seventy by one hundred feet and forty-two feet high, and capable of seating 1.000 persons. The lower part will then be used for school, lecture, class rooms, etc. It is the intention of the trustees to make the building not only substantial, but also very attractive in appearance, both outwardly and inwardly.

When completed. which will be next summer, the whole cost will be in the neighborhood of $50,000. Rev. C. C. Stratton, Pastor, H. Monheim, Superintendent of building.

Church of St. Mary Magdalene (Catholic.)

This building is also of brick, with a gothic roof. It is a plain but substantial building, with no pretentions to display. There are accommodations to seat about 500 persons.

The location is Second East street, near the corner of First South. Rev. Father Walsh, Pastor. Cost of building about $10,000. H. Monheim, Superintendent of building.

Folsom & Romney,

Architects and builders, report the following erections and improvements done by them during 1872:

Two frame houses in the 20th Ward, value....................	$4,200
Additions and improvements for John T. Caine, Esq., same Ward....................	3,500
One frame house in 12th Ward, for Mr. Anderson....................	3,200
Improvements for Bishop Hunter, in the 17th Ward....................	2,700
Improvements for Mr. Reid, in the 16th Ward....................	2,500
Building one frame house in the 14th Ward....................	2,000
Various repairs, additions and alterations....................	4,000
	22,100

H. Monheim.

Architect and builder, late of Corinne, reports the following:

Superintending residence of R. N. Baskin, Esq., on Heber's Bench, a large stone mansion, not yet complete, containing about 15 rooms, some very large, with bay windows fronting the south. Outlay up to the present time, about....................	$40,000
A two story frame house for R. H. Robertson, Esq., in the 12th Ward; eight rooms, double porch, pitched roof, with verandah on top, cost....................	3'800
A two story frame house for Sol. P. McCurdy, in the same ward, ten rooms, portico in front, double bay window, cost....................	5,000
A house of same description in 19th Ward, for Harry Hardy....................	5,000
A two story brick house for J. Orstein, in the 12th Ward, containing nine rooms, ordinary construction, cost....................	6,500
Total....................	$60,300

William Paul,

Architect and builder, reports as follows:

A two story handsome frame cottage for Paul Schuttler, in the 12th Ward, nine rooms, has one bay window, a portico and veranda, cost....................	$7,000
A store and building on Commercial street....................	700
A square adobe house, two stories, in the 20th Ward, for David W. Evans, contains ten rooms, hip roof, two bay windows, not yet finished, present outlay....................	2,000
A two story adobe dwelling house, in the 6th Ward, for Gardner Fenton, contains ten rooms, cost....................	3,300
Two buildings with stores, on Main street, north of and same block as Kimball & Lawrence, cost about....................	5,000
Alterations and improvements....................	5,000
Total....................	$23,000

William Asper,

Architect and builder, reports the following:

In the 19th Ward a two story frame house, with seven rooms and cellar, for Enoch Reese, gothic style, one bay window and veranda, cost about........ $2,200

A similar house in the 7th Ward for Alfred Best, with porch back and front, cost........ 2,300

In the 18th Ward a two story villa residence, for Ernest Young, cut stone foundation, with fine cellar, nine rooms, two verandas, one bay window and large entrance hall, cost........ 6,300

Same Ward—a one story villa residence for George H. Snell, cut stone basement, bay window and veranda, six rooms, cost.. 6,000

In the 20th Ward, a one story house containing seven rooms and cellar, two verandas, for Parley Williams. cost........ 2,100

In the 12th Ward, a small, one story house, cost........ 1,200

Additions and improvements...... 6,000

Total........$26,100

Culmer, Armitt & Co.,

Architects and builders, report as follows:

A handsome two story residence on First East street, above the Theatre, now building for Brigham Young, Sr., basement is of granite, upper floors of adobe, Mansard roof, containing chambers. Dimensions of building, 30x40 feet, contains sixteen rooms, including entrance hall. Water and gas pipes throughout. Will cost when complete. $20,000

A gothic house on Second East street, corner of South Temple, also for Brigham Young, Sr., one and a-half stories, with basement of stone, upper floors of adobe, nine rooms, double bay windows with veranda in front, balcony north, cost..... 3,400

In the 12th Ward, a six-roomed cottage house for E. F. Martin. Rock basement. Has a bay window and porch. Cost........2,200

A cottage house in the same ward for J. C. Liddell. Five rooms and basement. Frame building. Cost........1,800

Also house and store for same person, three doors above Post Office, on Main street. Cost........1,350

Store and factory on Commercial street for James W. Day & Co. Frame building. Cost........1,500

An adobe house in the 20th Ward for Jas. McGee. Contains five rooms. Cost........2,000

Several small houses, additions and improvements........5,000

Total 37,250

T. J. Johnson.

Architect, reports the following:

Residence of T. R. Jones on 5th street, 12th Ward, a two-story basement and attic frame house hip roof; handsomely fitted both outside and inside. Has two large bay windows; contains ten rooms. Cost........12,000

A large handsome two-story and attic frame residence for B. M. DuRell on the north corner of same block; contains 15 rooms. Has a hip roof. Tower entrance; bay windows. Dimensions of principal parlor, 16x35 feet. Cost about........20,000

A two story and attic frame residence on East Temple street, west side near Heber's Bench for Len Wines. Stone basement contains 15 rooms; two bay windows. Jos. Hunter, Builder. Cost about........12,000

Total $44,000

Sundry Buildings.

On Main street, near Wells, Fargo & Co's, and on First South west of Kimball & Lawrence's. Cost for the two, about. $20,000

The City Meat Market, corner of First South and West Temple streets, cost about........ 15,000

Eight stores with upper rooms on second story, on the blocks west side of Main street, north of Kimball & Lawrence's...... 30,000

Stores built by sundry persons on block in front of Theater and Commercial street, and various small houses in different Wards not enumerated........ 25,000

RECAPITULATION OF COST OF BUILDINGS AND IMPROVEMENTS.

Walker House	$125,000
First National Bank	80,000
Clift House	75,000
Clift Place	30,000
Clarendon House	5,000
Great Western Hotel	10,000
St. Mark's Episcopal Church	50,000
St. Mark's School House	25,000
Z. C. M. Inst. addition	65,000
Cisler's Building	12,000
Groesbeck's Block	35.000
Trowbridge's Building	35,000
Grenig's Building	12,000
A, W. White & Co.'s Bank	20,000
Methodist Episcopal Church	50,000
Church of St. Mary Magdalene	10,000
Folsom & Romney, builders	22,100
H. Monheim	60,300
Wm. Paul	23,000
Wm. Asper	26,100
Culmer, Armitt & Co	37,250
T. J Johnson	44,000
Goddard's Buildings	20,000
City Meat Market	15,000
Eight stores on west side of Main st.	30,000
Sundry buildings in various Wards	25,000
Total	$860,500

FREIGHT RECEIVED AND FORWARDED BY THE U. S. R. R.

FREIGHT FORWARDED.

Date. 1872.	Fuel lbs.	Ore and Flux. lbs.	Lumber. Feet.	Produce. lbs.	R. R. Material. lbs.	Machinery. lbs.	Wagons. lbs.	Sundries. lbs.	Building Material. lbs.	Merchandize. lbs.	Ore. lbs.
January....	213,200	180,000	97,090	60,000	......	215,308	......	......	......	145,423	......
February...	106,900	160,000	290,740	50,715	......	221,946	......	60,000	......	314,600	......
March......	222,306	22,400	95,728	80,000	......	197,917	......	79,000	......	865,820	......
April.......	169,000	427,000	159,175	270,577	99,895	61,037	......	......	......	399,919	......
May........	736,000	557,600	284,382	313,850	277,900	67,741	24,050	......	......	756,611	......
June.......	1,656,000	456,844	91,204	392,000	640,790	......	......	......	167,000	687,777	......
July........	2,239,500	687,200	......	386,500	2,882,485	13,100	......	......	714,500	599,473	......
August......	2,145,000	859,661	365,102	335,278	1,517,150	10,000	......	80,000	971,000	853,686	......
September..	1,701,000	784,000	661,197	247,963	302,975	83,890	20,722	......	698,700	947,695	129,906
October.....	1,537,200	1,657,600	873,189	820,000	724,702	234,839	26,510	......	536,918	1,210,676	338,306
November ..	2,127,500	1,393,400	883,477	610,000	727,500	189,492	110,000	......	478,587	1,064,036	397,385
December...	4,239,400	922,000	317,525	676,074	743,210	38,037	40,050	......	277,089	677,837	174,659

FREIGHT RECEIVED.

Date. 1872	Ore. lbs.	Bullion. lbs.	Building Material. lbs.	Produce. lbs.	Reck. lbs.	Merchandise. lbs.	Sundries. lbs.	Fxpress. lbs.	Lead. lbs.
January....	2,045,300	400,000	....	4,255	440,000	85,186	....	85,086	....
February ...	722,526	461,656	....	....	440,000	27,392	....	....	....
March......	978,640	289,367	....	....	....	79,253	....	....	....
April.......	811,456	442,760	60,000	....	600,000	143,609	....	....	....
May........	1,409,901	380,000	100,000	....	620,000	138,049	....	....	....
June.......	700,000	620 000	604,740	....	....	99,912	....	....	....
July	987,129	1,060,000	240,000	20,200	280,000	26,842	....	30,355	....
August	2,107,804	1,340,000	700,000	....	....	43,967	32,500	....	....
September..	2,997,403	1,340,000	103,000	....	300,000	8,924	....	....	....
October	4,390,870	1,882,222	361,500	80,000	320,000	32,667	3,051	....	....
November..	2,701,431	1,560,000	594,500	140,700	200,000	35,323	20,000	....	....
December ..	1,591,113	1,490,807	303,000	101,490	240,000	42,526	187,615	....	340,000

Recapitulation of Freight Received.

Ore, lbs.	21.443,572
Bullion, lbs.	11,066,812
Building Material, lbs.	3,066,740
Produce, lbs.	345,645
Rock, lbs.	3,440,000
Merchandise, lbs.	763,650
Sundries, lbs.	248,166
Express, lbs.	115,441
Lead, lbs.	340,000
Total	40,825,026

Recapitulation of Freight Forw'd.

Fuel, lbs	17,093,000
Ore and flux, lbs.	9,149,261
Lumber, feet	4,118,809
Produce, lbs	4,242,957
Railroad Material, lbs.	7,916,607
Machinery, lbs.	1,363,307
Wagons, and Sundries, lbs.	440,332
Building material, lbs	3,843,794
Merchandize, lbs.	8,513,553
Total	59,981,620

PUBLIC ENTERPRISES IN SALT LAKE CITY.

The rapid growth of the city and the want of a proper provision against fire caused the organization, during the summer of 1872, of

The Salt Lake Fire Department,

Which consists of one Chief and three Assistant Engineers, fifteen officers and one hundred and nineteen members, divided into three companies, as follows:

PIONEER ENGINE COMPANY, NO. 1

Has a Silsby rotary steamer, two hand engines, one hose cart and five hundred feet of two and a-half-inch hose.

The cost of the same was:

Steamer Pioneer	$7,500
Hand engine	650
Cowing engine	816
Hose cart, appurtenances and 1,300 feet of hose	1,160
Total	$10,125

EAGLE HOOK AND LADDER COMPANY

Has a spring truck with six ladders varying from 15 to 45 feet in length, and all necessary accompaniments. Cost $1,500.

ALERT HOSE COMPANY

Has a hose carriage with a thorough outfit, and cost $1,100.

THE EQUIPMENTS

Of the Department, consisting of hats, caps, belts and shirts, cost $870.

THE ENGINE HOUSE

Is located next door to the City Hall and is two stories high. The lower part is the engine room. The upper is a hall and sleeping accommodations. The cost of the building was about $6,000.

RESERVOIRS.

The Department has five large reservoirs sunk into the ground at convenient points of the city, by which an ample and constant supply of water is secured. The cost of the reservoirs was about $1,750.

The total cost of the Department, up to the 31st of December, 1872, was about $21,345.

Salt Lake City Gas Company,

Incorporated May 25th, 1872. Capital stock, $150,000.

President	Daniel H. Wells
Vice President	George A. Smith
Secretary	T. W. Ellerbeck
Treasurer	James Jack

The works of this company are being rapidly pushed forward under the able supervision of the Secretary, Mr. T. W. Ellerbeck, who is also Superintendent. Much difficulty was encountered in digging the space to be occupied by the gas holder, as the springs of water are only six feet below the surface, and pumping out, notwithstanding the sides were shored up with heavy planking, proved of no avail, but at last Mr. Ellerbeck hit upon the expedient of digging a ditch outside of the space into which the water was drained off.

Work on the tank is now completed and the brick lining finished. The gas holder is now being built inside of the tank, and about two-thirds of it are finished. It will measure 68 feet in diameter, be 20 feet high, and capable of containing 75,000 cubic feet of gas. There will be six iron columns to support the gas holder when charged; the columns are 21 feet high, surmounted by caps 3 feet high, in all 24 feet. The retorting and purifying processes will be carried on in separate buildings standing side by side with a space of thirty feet between them. Both of these buildings are under fair headway, the foundations and a portion of the upper works are of solid stone masonry, and the balance will be constructed of brick. The smoke stack is already some twenty feet high, and is provided with a jacket, or outside covering thirteen inches in thickness, leaving a space of four inches between it and the stack, with air holes at the bottom to let in sufficient air to cause a draft and keep the stack cool. About 500,000 bricks will be used in constructing the buildings, offices and tank. An eight inch main pipe will conduct the gas to the lower part of the city, from which will diverge smaller pipes to the portions of town intended to be lighted. The main pipe is being laid, and the balance will soon follow. It is expected that the whole of the works will be completed and in running order early in the spring. The coal to be used will come from the mines of the Territory. The location of the works is one block west of the U. C. R. R. depot.

A contract has been entered into between the Gas Company and the City Council to supply the city with gas at the uniform rate of four dollars per thousand feet.

Salt Lake City Rail Road Company.

Organized January 24th, 1872; John W. Young, President; W. W. Rider, Secretary; capital $180,000.

This road was commenced on the first day of July last and has now one mile and a half completed. The enterprise has been a financial success from the day it was first opened to the public. The road commences at the terminus of the U. C. R. R. depot, and traverses the principal streets in the city. In the spring another mile and a half will be added, the rails and ties for which purpose are all on the ground. It is the intention of the company to ultimately extend the road to the sulphur springs Bathing Houses, a place of great resort for tourists and residents during the summer months. The baths are about one miles north of the city.

Salt Lake City Water Works.

This is not an incorporated association, but is under the control and management of the City Council. The works are in process of construction, having only been commenced last fall. Tanks and filtering apparatus are being erected some distance up the City Creek at an elevation of some hundred and fifty feet above the main portion of the city. The water after undergoing a thorough process of filtration, will be conveyed to the city through a twenty-inch "laminated" pipe; and from it will be again distributed through sixteen inch pipes of the same material to certain points, from whence the water will flow into a series of smaller pipes, which in turn will supply a greater number of pipes of lesser bore.

The arrangements contemplated are very perfect in their character and are being carried out with much judgment and care, and when the whole is completed and in working operation, it will prove a great boon to the public; as at present those families who have not wells on their premises are compelled to use water from the ditches on the sides of streets for domestic purposes, which although comparatively pure when it first leaves City Creek, becomes greatly adulterated and impure in its passage through the various streets and, by the time it reaches the lower part of the city is very deleterious and unwholesome. It is calculated that the works will be completed and in operation early in the spring, when the public will have pure water.

THE COAL AND IRON FIELDS OF UTAH.

The following letter, from the able pen of WELLS SPICER, ESQ., will be found of great interest.

Editor Salt Lake Tribune :

In connection with my articles, suggesting proper laws for obtaining titles to mines of coal and iron together with the lands in which they are found, I have concluded to say a few words about the extent of the fields in which these materials exist, and particularly of the southern mines or fields.

Coal Mines.

The mines along the line of the Pacific railroads are well known and many of them well developed. The coal from these mines supplies both the U. P. and C. P. Railroads, as well as the entire country along their lines, while much of it is being sent both to California and the States. It also supplies the market here in this city. Again the iron ore found along the line of the U. P. R. R. is largely imported into Utah as a flux for the furnaces. The quantity is not so very great at this time but, as smelting furnaces increase the consumption of hematite ores will increase until the quantity becomes immense. This is a drain upon the resources of the Territory, to send to Wyoming for it, while Utah has it in greater abundance.

As for coal, there is no country of equal size that can equal Utah in the extent of its coal fields. These coal beds extend from the Sevier Valley eastward to the very base of the Rocky Mountains, and are over one hundred miles in width. The valleys of the Sevier, Sanpete, Thistle, Rabbit, and nearly every other valley in the southern part of the Territory has extensive coal beds on either side. The streams that flow into the Colorado River and especially Green and Grand Rivers, whose junction forms the source of the Colorado as well as the San Rafael River, are lined with coal beds. I believe it was in 1866 that Prof. Agassiz visited that country, and Prof. Silliman a year later, and I was at the time informed that they each reported that that country contained the most extensive fields of anthracite coal ever yet known. Within the past few weeks splendid specimens of anthracite coal have been brought up from Southern Utah. Of course I cannot tell from precisely what point they came, as that was a secret to the holders, but it was sufficient evidence to prove the existence of anthracite there.

This Southern coal is admitted by all disinterested persons to be far superior to anything yet found in the North. All the coals found in the North are said to be intermediate between the lignite and bituminous, or at least, all of them will decrepitate and "slack" rapidly upon exposure to moisture and warmth, that is, will "soften down" and become fine; and it is not yet decided that any of them will make coke. However we will all admit that these coals are a very good thing and a very fair article for any market; but none of us will admit that they are equal to the Pittston, Lackawana, Wilkesborre or other anthracite coals of Pennsylvania. It is contended for Southern coals, that while the majority of them are not superior to Northern coals, yet many are superior, as they will not decrepitate and will readily and always coke, and are generally of a purer bituminous quality. Besides which, they now claim for the South a genuine anthracite, equal to any found in any other part of the world. The Northern coals have all been tested and proven good, while the Southern are as yet mostly on repute, which always must be taken with a few grains of allowance.

Iron Mines

also exist south in great abundance and of good quality. A proof of this has been established for years in the shape of blast furnaces that produce pig iron, and in foundries that reduce it to castings used in machinery throughout that section. I remember now a remark that General G. M. Dodge made in a coach as we were crossing the plains to Denver seven years ago, that, "some of us in that coach would live to see the time, when the greatest part of the iron ore used for railroads and heavy castings in the United States would be produced in the valleys of these mountains."

With the building of railroads to Southern Utah, and the enterprise, industry and progress that characterize the American people, we may look for a speedy verification of the General's prediction.

Such splendid fields for Yankee speculation, enterprise, and skill; such opportunities for the "coming man" will not long be idle. The pioneer and prospector are already there; the speculator has been, and will go again; the miner, the operative and all grades of fortune-hunters are turning their eyes and steps towards it.

Railroads are pointing towards it. During the present winter there have been no less than three different companies organized here to construct railroads to those coal fields. Besides this the matter is being agitated in Nevada to construct roads to the same point, and capital and enterprise will seek this field and connect it by railroad communication with all important points east and west.

Now, then, my intention and desire in writing these articles is that laws may be passed by which the poor prospector and miner, those who discover and make known the existence and location of these mines, may be able to obtain some of the benefits of their industry, perseverance and hardships, and that all of these valuable coal and iron mines shall not be gobbled up by speculators, capitalists and railroad corporations. I want the poor man to have a fair chance, so, friends, work for the passage of the proposed amendments.

SPICER.

SOME OF THE PRINCIPAL MINES OF UTAH.

The Emma Mine

Is situated in Little Cottonwood Canyon, formerly a portion of the "Mountain Lake" Mining District. It was the first fully developed mine in the Territory. The results obtained in its development gave the impetus to mining generally. This mine stands at the head of the list for quantity of ore taken out and work done upon it. The first great discovery was made in 1869 when the prospectors at a depth of 127 feet struck a lode of mineral of vast extent, which afterwards yielded a profit of $120 per ton on shipments of the ore to Swansea in Wales. In the winter of 1869-70 a half interest in this mine was offered and could have been purchased from the discoverers for less than $3,000. In the month of May, 1870, the firm of Walker Brothers of Salt Lake City purchased a one-sixth interest for $30,000. In the summer of 1871 a half interest in the mine was sold to New York capitalists for $750,000. In the winter of 1871-2 the Emma Silver Mining Company of Utah, was incorporated, stocked and placed upon the London market at £1,000-000 sterling. Fifty thousand shares of £20 each were issued, twenty-five thousand of them were immediately taken up, and the remaining twenty-five thousand were retained by the vendors of the mine.

The Direction and management is represented as follows:

Chairman, George Anderson, Esq., M. P.
Vice Chairman, E. B. Willyams, Esq., M.P.
Resident Gen'l Manger, Warren Hussey, Esq.
Superintendent, Silas Williams, Esq.
Secretary in London, W. H. Tooke, Esq.

The quantity of ore taken out of the mine during the year 1872, was 10,500 tons, and the average value was about $100 per ton, making a total value of $1,050,000. The proportion of silver was 100 ounces to the ton of ore and 45 per cent of lead. The average daily quantity of ore when working is about sixty tons, but 100 tons can be got out when the mine is worked to full capacity. Connected with the mine is a steam hoisting engine, the capacity of which is 150 tons per day.

Dividends have been declared and paid monthly at the rate of one and one-half per cent on the capital stock.

In the spring of 1872 the mine was flooded with water—an experience quite new in the history of the mine, and which caught the company unprepared for such a disaster. Two large "Knowes'" steam pumps have been since erected and they are of sufficient capacity to keep the mine dry, should such another casnality occur.

Some considerable new developments have been made during the past year. Shafts have been sunk below the previous lowest workings, which has developed a large vein of ore, very rich in silver, a specimen of which weighing 100 pounds, averaged by assay 1123-87-100 ounces in silver to the ton.

The arraugements for working this winter are very complete. The out-buildings are of a very substantial character. A new and commodious Ore-house has been constructed, also a tramway for conveying waste matter from the mine. The new timbering in the mine is a first-class piece of workmanship and exceedingly strong.

Vallejo Mine, Little Cottonwood Canyon.

This mine was among the first locations in the District but only been worked about two years. Ore has been shipped from the mine at various times since the first working of which there is no record. For the last six months it has yielded an average of ten tons daily. The mine is opened by a tunnel that cuts the vein two hundred feet below the surface. One level has been opened sixty-five feet below the tunnel which shows the vein to be more regular than in the upper levels. The appearance below gives great promise of a first-class mine. The average assays of ores shipped during the last six months is fifty per cent of lead and forty ounces of silver per ton. Connected with the mine is a wire tramway, 2380 feet long commencing at the mouth of the tunnel and running to Main street, Alta City. The cost of the Tramway was 14,-000 dollars.

There are ore houses at both ends of the tramway, one for receiving and the other for delivering the ore. The property belongs to the Emma Hill Consolidated Mining Company of San Francisco, California. L. W. Colbath, Superintendent.

The Flagstaff Mine of Little Cottonwood,

Is owned by an English company, and was incorporated in London in November, 1871, with a capital of £300,000. The property includes the Flagstaff Mine, Maxwell Tunnel and extensive furnaces.

The mine at the time Mr. Maxwell reported on it for the directors had in reserve 6,000 tons of ore blocked out by shafts, adits and winzes. The work of development has been steadily increasing, and at the present time shows the reserves of ore to be 26,000 tons, which result has been arrived at after a careful examination by Mr. Maxwell and Capt. Goldsworthy, the foreman at the mine.

During the year 1872 the mine yielded about 10,000 tons of ore.

Eighty tons is being raised daily, which can be increased to 100 tons without overworking or injuring the mine. The ore is sent down from the tunnel to the ore house on an incline in summer, and in stone boats in winter, the latter working much the best, and carrying down twice the quantity of ore in half the time. The mine is under the management of Captain Goldsworthy, who has had eighteen years experience in silver lead mines in England, and is fully capable of managing all the under ground workings of this extensive property.

The furnaces, which are situated at the mouth of the canyon, are three in number, one hot and two cold blast furnaces, and are capable of smelting 75 tons of ore daily, which makes 25 tons of bullion, valued at $340 per ton, $55 of which is gold.

The assay value of ore is :

70 oz. silver, 50 per cent. lead, ¼ oz. gold.
100 " 40 " " ¼ "

The hot blast furnace, the only one in the Territory, works very successfully, saving greatly in charcoal and losing no lead. The furnaces are run by water-power, the company having the full water privilege of the Cottonwood Creek.

The furnaces are under the able management of L. M. Wessells.

This company is being very successfully worked and pays largely to its shareholders, and from present indications will continue for years to come.

Dividends 30 per cent. per annum, or 2½ per cent. per month are paid, £69,000 having already been paid in dividends.

The whole is under the superintendence of Mr. N. M. Maxwell.

The Winsor Utah Silver Mines,

Of Little Cottonwood District, comprising the Last Chance, Hiawatha, Montezuma and Savage lodes were consolidated September 12, 1872, and are owned and controlled by parties in Utah, Michigan and New York. Since this property was consolidated the owners have marketed about 500 tons of ore at an average selling value of $69 per ton. This property is now being vigorously worked on ore. The veins in the bottom of the Last Chance and Savage lodes are yielding fine ore assaying from $160 to $307 per ton, and carry from 34 to 60 per cent. of lead. The present depth of the Last Chance shaft is 366 feet; depth of Montezuma shaft 375 feet; length of tunnels on the property 550 feet; depth of Savage and Hiawatha shaft 350 feet. The company have erected a fine boarding-house, ore house and other buildings necessary to economically handle their property during winter, and have connected the various outlets to their mines by cross tracks to the main tramway, and are prepared to mine and ship ore to good advantage during the present winter. The amount of ore now in sight in the Montezuma mine carries a face three feet wide the entire length of the shaft. The Last Chance vein is eighteen inches thick. The winzes in the Savage and the Savage Discovery shaft have a fine body of ore averaging from 7 inches to 31 inches in thickness. The Hiawatha incline has a good show of mineral its entire length. This property will compare favorably with any property on Emma Hill either for quantity or quality of its ore at the same depth and outlay for work done. The whole is under the superintendence of Mr. J. C. Winslow.

The Wellington Mine,

Also in Little Cottonwood Canyon, is located one mile and a half southeast of Alta City, near the summit of the divide between Little Cottonwood and American Fork Canyons. The developments consist of an incline shaft two hundred feet in depth at an angle of about thirty-six degrees, also levels diverging from it approximating to eight hundred feet in length. A body of ore lately discovered is estimated to contain over six hundred tons in sight, but of its ultimate extent no calculation has been yet made.

The character of ore is galena and carbonates, and its average assay value is $90 in silver and fifty per cent lead. The width of the vein proper is about thirty feet, having ore strata four feet thick following both foot and hanging walls, leaving twenty-two feet of crevice matter laying between those strata. The strata are composed of white spar interspersed with pockets and chambers of ore. The work of prospecting for the main body of ore has been remunerative, and paid all expenses up to the present time. About the 1st proximo a working tunnel will be commenced which is intended to strike the vein at a depth of 250 feet. The object of the tunnel is to facilitate the working of the mine, and will be used for taking ore from the mine, instead of hoisting, and also for drainage purposes. The present ore body was discovered about one hundred feet from the surface. A lower level is being now run with a view of ascertaining the probable extent and value of the body. Connected with the mine is the Wellington furnace, which has a capacity of smelting twenty tons of ore per day. The property is owned by the Wellington Mining Company of San Francisco. Incorporated in January, 1872. W. N. Young is general Manager, and E. J. Field, Superintendent.

The Davenport and Matilda Consolidation,

Situated in Little Cottonwood Canyon, is owned by John H. Ely and others. Work was commenced in the spring of 1871. This property has only recently come into possession of the present owners, who paid a large sum of money for it, having full faith in its intrinsic value. The following work has been done towards development: On the Davenport a shaft and incline 280 feet in length, a tunnel 529 feet, two smaller shafts 65 feet, and 50 feet of drifts. Matilda shaft of the Davenport 110 feet, drifts 255 feet; making a total of 1,289 feet. The width of the vein of the Davenport is four and one-half feet, and that of the Matilda from four to twenty-three feet. The character of ore is free milling, composed of carbonates and chlorides, with an abundance of silver and a very small quantity of lead. Its average value is close upon $150 per ton.

The capacity of the mine is from fifty to seventy-five tons per day.

The out-buildings, hoisting-apparatus and appliances are very complete and substantial. A tramway 750 feet long connects the mines with Grizzly Flat.

The Superintendent is Wm. B. Smith, Esq.

The Lexington Mine,

In Little Cottonwood Mining District, from which Lexington Hill takes its name, is one of the most promising veins in the District. It presents a vein of ore ten feet thick at a depth of ninety-five feet, assays from which show sixty ounces of silver and eight per cent of lead. The ore is principally yellow carbonates. The mine has two shafts, one ninety-five feet and the other forty-five feet in depth. The claim contains in all 2,000 feet, and presents all the evidence of a true fissure vein. The ore is of a milling character. There are about 250 tons of ore on the dump. The property is owned by General P. E. Connor, Thomas Moore, George Pierson and others.

The Amador Mine,

In little Cottonwood is west of Emma Hill, and at the head of Superior Gulch. This mine, although not much known, presents a very promising appearance. The vein where exposed in the workings is three feet thick and has all the indications of being a true fissure. The ore is high-grade, free-milling, and carrying silver and gold with but very little lead. Some eminent Eastern capitalists are investigating the merits of this and some adjacent mines with a view of purchase. The high standing and position ofh te gentlemen in question is such as to warrant the supposition that there is considerable value attached to the property.

The El Dorado Mine

In Big Cottonwood Mining District, is located about one mile east of Fish Lake, on a line north-easterly from Emma Hill, and between it and the Uintah District. This mine is developed by a tunnel 175 feet in length, discovering a vein of ore twenty feet wide, composed of oxides, and corbonates, and will yield twenty dollars to the ton of ore by milling process.

The Panacea Mine,

Is situated in Mineral Fork, Big Cottonwood Mining District, and is at present receiving much attention. It is on the ridge or divide between Bear and Mineral Fork gulches, and is opened by a shaft on the ridge and a tunnel on either side of the mountain, which exposes the vein and shows a sectional width of high grade mineral four feet in thickness. The vein is traceable on the surface up and down the hill for a distance of fifteen hundred feet, which proves it to be a fissure vein. By triangular calculations from workings on the vein, where exposed, it is estimated that $300,000 of ore is ready for immediate extraction. The owners are perfecting arrangementss for active operations in the spring.

The Prince of Wales and Antelope Mine

Situated in Silver Fork, Big Cottonwood Canyon is remarkable for its well-defined vein of ore which can be traced on the surface for a distance of five hundred feet. The average assay value exceeds $150 per ton. The mine has been worked more than two years, and a large amount of labor performed on it, including 863 feet of tunneling, shafting and drifting, the course of the vein being followed the whole distahce.

The Flagstaff Mine, of Parley's Park

Situated in Uintah District, Parley's Park, is owned by the Park Silver Mining Company of the state of Michigan, organized in Dec., 1872. Capital stock $500,000. The officers of the company are as follows: A. H. Morrison, President; F. A. Nims, Secretary; W. R. Morrison, Treasnrer; W. H. Howland, Superintendent.

The mine was discovered by Mr. W. H. Howland on the 28th of May, 1871, and opened in the fall of the same year. A large amount of ore was taken from it, shipped to Salt Lake City, and sold to good advantage. The present assays show from $75 to $150 per ton of silver, and about sixty per cent of lead

In the early part of 1872 Dr. Vollum purchased of S. W. Howland and others an undivided four-fifth interest of the mine, Mr. Howland retaining one-fifth interest. In the following December Dr. Vollum sold his interest to the present company, which is composed principally of residents of Michigan. From present indications this mine would appear to be one among the wealthiest in the Territory, it lies in close proximity to the following mines, which are all of them in good repute: The Ontario, McHenry, Pioneer, Walker and Webster. The location of the mine possesses many advantages; such, for instance, as an abundance of wood and water, the severity of winter will not interfere with or prevent its being successfully worked, and it is also in the immediate vicinity of a splendid agricultural district.

The Pioneer Mine

In Uintah district, Parley's Park, was discovered in October, 1871. The mine crosses the divide or ridge, which separates Parley's Park from Provo Valley, and is called Pioneer ridge after the mine. It lies at an altitude of over eight thousand feet above the level of the sea. The course of the lode crosses the backbone of the ridge at nearly a right angle. The location comprises fourteen hundred feet. A tunnel may be run entirely through the hill on the mine all the way; and both ends would still be above the bottom of the ravine. A line drawn from one entrance over the apex of the ridge down to the entrance of the tunnel on the other side would, with the tunnel for a base, form a perfect triangle. The lode on the summit is seven feet wide, and the ore ranges from sixty-seven to two hundred and twelve dollars per ton. The work so far consists of an open cut forty feet long and a shaft seventy feet deep. The property is owned by Thos. Moore and George Pierson.

The Miller Mine.

This mine is located near the head of American Fork Canyon, on what is known as the Middle Mountain. The lode occurs at the point of contact of the limestone and quartzite. The ore is mostly carbonate of lead, carrying silver and gold, and is a very free smelting ore. The mine at the present time is being prospected with a view to next season's work. This mine is owned by the Miller Mining and Smelting company of New York. Francis Skiddy, president; Gen. Lloyd Aspinwall, chairman of Executive committee; E. Wilkes, general manager.

The Miller ore is smelted at the Sultana Furnace, two and one-half miles distant, situated in American Fork Canyon.

These works consist of three shaft furnaces of a capacity of seventy tons of ore per day.

The works are complete in every respect. The blowing arrangements consist of a No. 10 Sturtevant Blower driven by a 25-horse power engine. The charcoal is burnt on the ground, the company having fifteen kilns for the purpose; these are connected with the furnaces by a tram road delivering the coal immediately at the furnace mouth.

To this point it is intended to run the American Fork railroad. The grading is now completed.

The Live Yankee Lode

Is situated in American Fork canyon. This lode has been worked by a shaft 84 feet deep and a tunnel 55 feet in length. The development discloses a vein over 40 feet wide of vein matter, a large proportion of which is galena yielding $90 in silver per ton and 58 per cent of lead, with one ounce of gold. There is now a very large quantity of ore on the dump.

The Mary Ellen Lode

Is at the north end of the Live Yankee lode, the developments having been mostly done on the latter near the junction of the two lodes.

The Silver Glance Mine

In American Fork mining district is owned by Messrs. John Tiernan and others of Salt Lake City. The mine was discovered in the month of October, 1870. It is situated on Silver Glance Hill. The extensive workings have developed an immense vein of ore, encased in well-defined walls, having an average width of six feet. The course of the vein is south-east and north-west, and it is traced and opened for a distance of over 700 feet, thereby establishing the vast extent, intrinsic value and permanency of the property. Several hundred tons of ore were taken out during the developments which are now laying on the dump. The work done embraces four tunnels and two inclines, the combined length of which is over 500 feet.

The character of the ore is chlorides and carbonates with Silver Glance and native silver. The average assay value is about $100 to the ton. Some assays of ore from this mine have run as high as $6,410. As a matter of interest we append a list of assays that have been made with their results:

June 6, 1871	$6.410-00
Oct. 25, 1871	4.845-59
Aug. 7, 1871	2.276-70
June. 24, 1871	2.194-71
" "	1.962-80
" "	1.466-60
Nov. 24, 1871, average 19 assays	440-08

The Last Chance Mine,

Situated in Bingham Canyon, belongs to an English company and was incorporated in London with a capital of one hundred thousand pounds sterling.

This mine was only partially opened when the company took possession. Work was immediately afterwards commenced and developments continued. The mine is now well opened and shows a body of ore estimated at seven thousand tons. The ore in the upper levels is free milling ore, giving assays of from sixty-five to one hundred and fifty ounces in silver and one ounce of gold to the ton. As the shaft was sunk, the nature of the ore changed to smelting ore, giving assays of from sixty-five to one hundred ounces in silver, and from thirty to sixty per cent of lead, with some traces of gold. Six hundred tons of ore have been raised and are now on the dump. A furnace site has lately been purchased, and works will soon be erected for the treatment of all ore coming from the mine. The capacity of the mine is twenty-five tons daily. Superintendent, N. M. Maxwell, Esq.; Assistant, J. B. Stanford, Esq.

The Kelsey Tunnel

Mining Company's locations, owned by Kelsey, Shearman and some N. York capitalists, in Bingham Canyon, are situated on the same ridge as the great Winamuck Mine, and only 2,800 feet distant therefrom. The claim comprises a tunnel site and ten valuable mineral veins, aggregating over twenty thousand feet of mining ground. The Kelsey Tunnel has been run into the base of the ridge for the distance of three hundred and thirty feet, cutting across two very large veins of mineral. The vein upon which the Winamuck Mine is located undoubtedly runs through the ridge penetrated by this tunnel, and it is believed by the proprietors that they will have but little further to run their tunnel before they will tap that great mineral vein. The Bingham railroad runs within two hundred feet of the face of this tunnel.

The New York Tunnel,

Owned by Messrs. Kelsey & Shearman, will tap a very large belt of well-known mineral veins at great depths, and furnish a constant drainage to a large amount of very valuable mining ground. The mouth of the tunnel is within five hundred yards of the line of the railroad in Bingham Canyon, and is of easy access by a good road already made.

Vespasian Hill.

Messrs. Kelsey & Shearman also own sixteen parallel veins on this hill, at the head of Markham's Fork of Bingham Canyon, distant one and one-half miles from the line of the railroad. This group of mines aggregate nearly forty thousand feet of mining ground. The Vespasian mine—the middle vein of the group—has been worked by an incline shaft to the depth of 308 feet, developing a fine body of mineral that ranges in assay value from $14 to over $1,600 per ton in silver, and from ten per cent. to seventy per cent. in lead. This mineral vein has been opened by shafts of limited depth for a distance of 1,500 feet along the surface, showing everywhere an even out-crop of over three feet in thickness. About one hundred tons of mineral is on the dump of this mine that will average near one hundred dollars per ton in silver and twenty per cent. in lead.

The Agnes Mine

owned by Messrs. Kelsey, Shearman, Godbe & Charlson, is a very fine prospect. A shaft fifteen feet in depth has been sunk on the vein—showing a three feet crevice—the half of which is filled with ore *averaging* 33 per cent. in lead and $265 per ton in silver, the balance of the vein being filled with quartz, assaying $12.50 per ton in silver. This valuable prospect is situated near the divide between Little Cottonwood fork of Bingham Canyon and the head of Pine Canon, Tooele county, and accessible by wagon road. Messrs. Kelsey & Shearman, also own many other excellent prospects, chief of which, are, the *Blackbud* and James in Carr fork, the Red Cloud, in the vicinity of Yosemite mine, the *Scarborough,* near Black Jack Gulch, the C. A. Dana, near the Agnes, the Henry Clews and Prentice, in Freeman's Gulch, and the Ella at the head of Markham—all of which yield very fine surface assays.

The Winamuck Mine,

Situated in Bingham Canyon, is owned by the Winamuck Mining Company (limited) of London. The Superintendent is Ellsworth Daggett, Esq., who was one of the owners previous to the mine passing into the hands of the present company.

This is one of the largest and best developed mines in the Territory. Two blast furnaces of the capacity of eight tons per day, each, form a portion of the extensive works belonging to the property. Some idea of the magnitude of the work done on the mine may be formed from the following statement: During the year 1872 there were smelted 3,955 tons of ore, producing 1,232 tons of silver lead, containing 191,161 ounces of silver which realized $353,551.26.

The Mono Mine,

Located in Dry Canyon, Ophir District, is owned by Messrs. Gisborn, Embody & Heaton. The extraordinary richness of some of its ores has already been referred to on page 11 under the head of Mining Interests. A description of the mine may be of some interest. The incline shaft is down 308 *feet.* Starting from a point 40 feet from the bottom of incline there are five drifts run on the left and three on the right of the main shaft. The vein of ore which has the appearance of a true fissure vein, averages about two feet; about three inches of it are said to be horn-silver and black sulphurets. The vein runs nearly east and west and pitches to the north at an angle of twenty-eight degrees. There is a fine large ore-house, also a dwelling house, office and blacksmith-shop. The owners confidently believe they have as good a mining property as any in the Territory.

The Chicago Mine of Dry Canyon

Is situated on Hidden Treasure Hill, Dry Canyon, Ophir District, at an altithde of nine thousand feet above the level of the sea.

Work on this mine commenced in the summer of 1871. The mine is owned by Wm. S. Godbe, Esq., of Salt Lake City. The extent of the claim is 2,000 linear feet. The main incline is down 250 feet. At the depth of 240 feet two drifts, 50 feet in length, have been run at right angles with the incline. The pitch of the incline is about 40 degrees in a northwesterly direction. Incline No. 2 is 80 feet deep, having an average angle of from 40 degrees to 45 degrees, and is connected with the main incline at that depth. Incline No. 3 is 30 to 35 feet deep. It has the same angles as No. 2, and connects with it at the above-named depth. Incline No. 4, or "Rambler," is between 40 and 45 feet deep, but is not yet connected with the ore. All these developments are westerly of the main incline. Incline No. 1 easterly is about 20 feet deep. Incline No. 2 easterly is down about the same depth. Some 500 tons of ore were taken out of the mine during the year 1872. The average assay value is 50 oz. in silver and 40 per cent. lead. The formation is limestone in strata, between which the vein occurs. The character of ore is carbonates of lead mixed with galena. The vein averages from 5 to 25 feet in thickness. The works and buildings connected with the mine are very substantial, extensive and well arranged for doing a large business. They consist of a large dump house, the wall of which is of dry rock 75 ft. long by 25 ft. high, affording dump room of the capacity of 75 x 50 feet. The whim and blacksmith's shop are under cover at the mouth of incline No. 1. There is a stone powder house, log stable with six stalls, an office, store-room, cook house and large log house for the accommodation of 30 workmen.

The shute is 130 feet long, 18 inches high and two feet wide, made of two-inch lumber and lined with heavy sheet iron. The ore is passed from the mine down the shute into a log ore house capable of holding two hundred tons. With the present appliances thirty tons of ore can be taken out of the mine in every twenty-four hours.

A roadway a quarter of a mile in length connects the mine with the Fourth of July Mine tramway.

The Tiger Group of Mines

Situated on Lion Hill, Ophir district. This group includes the Tiger, Silver Chief, Zella and Rockwell. These mines were discovered in the fall of 1870. They are all being vigorously worked. The lowest workings are to the depth of 250 feet, The extent of tunneling and shafting done in these mines exceeds any other in the Territory, it aggregating 2,580 feet. Between three and four thousand tons of ore have been taken out of the mines, the average value being about $125 per ton. Some specimens have assayed as high as $1,000 per ton.

The Mountain Lion Mine.

Situated on the summit of Lion Hill, East Canyon, Ophir District, discovered in the fall of 1870. The principal owner is Mr. Ormus Bates of Ophir.

This mine has been opened more to prove its extent than for the extraction of ore, while much dead work has been done on account of tracing out "jumpers," who took up locations around when the value of the property was established. Notwithstanding the above disadvantage large open cuts, shafts, dips, etc., have been made, and immense bodies of ore exposed, extracted and sold; and the fact has been established that this mine has a perfect and incontrovertible title, and will embrace, when further developments are made, several mines in the vicinity which are located on the course of its vein. It can already trace the Blue wing, Webster, Defiance Sunnyside and others as upon the same vein of mineral. In support of the value of the property, we are credibly informed that one of the original locators sold to Mr. Ormus Bates 200 feet in the fall of 1871 for the sum of $20,000 gold coin. Also, that in the month of April, 1871, Mr. Q. A. McConnell, then of the U. M. & S. Co., bought and shipped 20 tons of ore from the owners of this mine to Swansea, England, for which the owners received $4,000 nett. This was at that time considered a fair average of the value of the ore. The average width of the vein is estimated at about six feet, and the average assay value is about $150 per ton; also assays were given as high as $4,000 to the ton. Numerous pockets of horn-silver have been met with in the course of developing the mine. It is considered that, so far as worked, the mine has paid for itself. The general character of the ore is chlorides and sulphurets, with a very small per centage of lead.

The Miner's Delight, or, the Blue Monster Consolidation.

Located on Ophir Hill, East Canyon, consists of the following series of mines, Blue Monster, (the oldest title,) Velocipede No's. 1 and 2, Silver Shield and Pocatello. The Blue Monster was discovered July 4th, 1870, the Miner's Delight July 28th, 1870, and the others at subsequent dates. The mines are owned and are being worked by an English Company.

By the statement of the resident manager E. Blackwell, Esq., dated March 1872, $1,000,000 worth of ore was then in sight. The assay value of the ore was $116 in silver, 52 per cent. of lead and $5 of gold per ton. The character of the ore is carbonate. It can be smelted without fluxes and worked with little or no blasting. While developing the Silver Shield and Velocipede, fifteen hundred tons were extracted and sold, which assayed $50 in silver and 45 per cent. lead to the ton. There are five tunnels, five shafts, and numerous drifts, which, passing as they do sectionally and longitudinally through the vein, would if in a continuous line extend over ten thousand linear feet. There is on the dumps of the different mines about four thousand tons of ore, which is being held until the erection of patent machinery designed and experimented upon by Capt. Selwyn, R. N. It is expected that in the Spring, active operations will commence to develope this valuable property, as the obstacles that have heretofore impeded the work are in a fair way to be removed.

The Vulcan Mine,

Situated about a mile from the city of Stockton, Rush Valley District, in the lower mineral belt, is one of the most promising mines in that neighborhood. The vein has a width of three feet, and is distinctly traceable through all present developments. The ore is of very easy reduction, carrying a high percentage of lead; and is found to be a splended flux in combination with the high grade ores of Dry Canyon. The owners are actively pushing work upon the property If present appearances are borne out in future developments, this mine will rank among the prominent mines of the Territory. The character of ore Carbonate and Galena, assaying on an average, $50 in silver and 40 per cent in lead per ton.

The Chicago Mine of Tintic

Is situated about three-quarters of a mile from Silver City, Tintic Mining District. It is on the line of the great mineral belt running through the District. The lode is a well defined fissure vein in a granite formation. The surface indications are exceedingly favorable, equalling any others in the District, a rich and regular body of ore having been developed. The works consist of a shaft 106 feet deep. About 100 feet southward from the shaft is a cut 26 feet deep, and a shaft has been sunk from it on the vein to a depth of 30 feet. From the bottom of the shaft a drift is run southward for 70 feet and northward for 100 feet, both worked on the lode and exhibiting a good body of ore and a regular foot wall at a depth of 100 feet. In connection with the works is a deep tunnel to facilitate operations. It is opened about 80 feet and will soon reach the lode. The character of the ores is carbonates, sulphurets and chlorides of silver, with a small percentage of lead. They are very high grade, as proved by assay. The surroundings of the mine are very favorable, both as regards location and facilities of transportation, besides being in close proximity to a mill now being erected on Tanner's Ranch.

The Mammoth Copperopolis of Utah (Limited)

Is situated in East Tintic Mining District, and was incorporated in London in the Spring of 1872, with a capital of $750,000. The direction and management is represented as follows:

Chairman, Lord Claud Hamilton.
Secretary, C. W. Cook.
Resident General Manager, S. W. Valentine.
" Secretary, P. N. Compton.
Superintendent, Thomas Couch.

During the year 1872 the mine yielded about 2,000 tons of copper ore, 1,000 tons of which valued at $150 per ton was shipped to Swansea. During the same period about 1,000 tons of gold and silver bearing quartz ore were extracted from the "South Hill," which is now lying on dump waiting the erection of a mill. The assay value of the last named, one thousand tons, is $40 per ton in silver, and $50 per ton in gold, making a total value of $90 per ton.

This section of the mine is opened by an open cut fifty feet long, thirty feet wide and and thirty feet deep. A shaft fifty feet deep is sunk from the bottom of the cut, and from thence a drift in a southerly direction, on the course of the vein fifty feet in length, also a drift north forty-five feet in length. These developments have exposed to view a vein fully thirty feet in width, from which can be extracted one hundred tons of ore per day, that will yield in silver and gold the value above given. A tunnel is now being driven from the foot of the hill which is in about sixty feet, and will intersect the vein at about eighty feet below the present workings.

The "North Hill" which has yielded the greater portion of copper ore, is developed by three shafts, the depths of which are respectively 71, 55 and 45 feet, besides drifting to the extent of two hundred and sixty feet. In addition to the above, there are several chambers below and above the levels, which have been excavated by stopping and scooping out the copper. The main tunnel is being driven from the foot of the hill, and is now in two hundred and seventy-five feet from the mouth. It will cut the vein one hundred feet below the present workings. About eight tons of copper ore are now being extracted daily from this section of the mine. A force of forty-five men is employed on the works. The company has purchased a fine mill site, and is about to erect thereon a thirty stamp mill and furnace.

ADENDA

TO MINING DISTRICTS.

American Fork District.

The Waterloo lode, discovered the same day as the Miller. It is in the same canyon, and directly opposite the Miller. A tshaft sixty feet deep has been sunk, disclosing a vein of high grade ore. The Walker lode has also a shaft ninety feet deep, and has a quantity of fine ore on the dump. Other mines of equal merit may be mentioned, among them are the Chelsea, the Champion and Emeline, all promising and well defined lodes.

Lyon Hill, Ophir District.

The Monarch and the Virginia series, embracing the Virginia, Lizzie, M. C. Raymond, State of Maine, Dudley Gray, Julia, Bay State, and others. The character of ores is strictly milling. The silver is in the form of chlorides and sulphides—the former predominating. Assays of the ore run from $40 to as high as $1,000 to the ton.

Camp Floyd District.

The Camp Douglas Consolidated has a shaft forty-seven feet in depth and two open cuts. The Star of the West, owned and worked by a New York company, is developed by several open cuts and shafts. The Stafford is a well defined vein. It is being worked by open cuts and a tunnel sixty feet in length. The Carrie Steele adjoins this mine and is promising well. The Silver Circle, Wandering Boy, Legal Tender, Comstock, Silver Star, America, Excelsior and Lone Star are all considerably developed and promise well. The General Morrow has a shaft fifty-five feet deep, and is very promising. The Antelope has a shaft seven by seven and twelve feet deep, also an open cut six feet wide and ten deep. The ore is of good quality from all these mines and assays high.

Bingham Canyon District.

The Grand Cross is about one mile and a half from Bingham City. The works consist of a shaft 22 feet and a tunnel 104 feet. The surface indications and the ore exhibited in the works, give promise of very favorable results.

The Life Pine has a shaft down 101 feet, bringing to light a fine body of ore.

The Silver Shield has a shaft 90 feet deep and the appearances so far are very promising.

TO FURNACES.

The Davenport Silver Mining Co's

Furnaces erected in the fall of 1872 are situated at the mouth of Little Cottonwood Canyon, and consist of two cupola blast furnaces of a capacity of ten tons of bullion each per day. The motive power for the machinery is water, obtained from Little Cottonwood creek. Each furnace is provided with a separate blower which possesses many advantages in smelting. The buildings are very large and well ventilated—a feature sometimes neglected in the construction of smelting works. The ores used at these works are chiefly from the company's mines—the Davenport, Matilda, etc., of Little Cottonwood Canyon. The charcoal used as fuel is from Truckee, California and iron ore for flux from Rawlings, Wyoming Territory. The general management is vested in John H. Ely of this city and Jay. H. Wooley, Superintendent, under whose supervision the works were erected. The plans were made by J. C. Cameron, Jr., and the mason work under contract by Evans and Morris of this city.

TO MANUFACTURING AND MECHANICAL INDUSTRIES.

Utah Fire Brick Company.

Wm. W. Chisholm, - - - President.
Wm. T. Matthews. - - - Superin't.
C. W. Bennett, - - - Tres'r and Sec'y.
Capital Stock, - - - - - $30,000.

This Company manufacture, at Salt Lake City and Lehi, Fire Brick, Fire Cement, Front (hand-pressed) building brick, stock brick, crucibles, retorts, etc. Raw material not surpassed in any part of the world. Lehi, Bingham and other clays used.

W. T. Matthews, the Superintendent, has had over thirty years' experience in Europe and America.

This desirable and much needed enterprise has only just gone into operation.

Iron and Brass Foundry.

Nathan Davis & Sons do all kinds of castings in Brass and Iron.

This establishment only commenced business a few days ago.

TO MINERAL RESOURCES.

Kaolin abounds on the banks of the Sevier river, and a large plumbago mine has been discovered in the extreme west of Beaver county; also large deposits of brimstone near Cove Creek, in Beaver county, and valuable copper ore in Weber county.

TO BANKS AND BANKING.

The Demand for Money in Utah.

The amount of money in circulation in Utah is small, as compared with the demand for a circulating medium. The statements of our three National and three private banks, made at the close of the year 1872, show an aggregate of deposits amounting to $1,213,839.84. Probably cash held in private hands in the entire Territory would carry the total up to nearly two millions at this season of the year. In summer, business of all kinds is much more active and at that period the volume of money in circulation is greatly enhanced. It is safe to say that during the busy season the amount of funds, in bank and in private hands, rarely falls below $3,000,000.

This sum is found to be greatly below our actual needs. We are growing at the rate of more than $20,000,000 per annum on a limited and vastly inadequate medium, of exchange. Our small supply of paper money changes hands so rapidly that it is worn to tatters in a few weeks and finds its way back to the Treasury as "mutilated currency."

So eager is the demand for money that its use commands excessive rates of interest. To be a money loaner anywhere is to be in the pathway to wealth; here, if honorably conducted, it is the high road to opulence. Two per cent. per month is the regular bank rate of interest, and this rate, which would seem excessive to a person not familiar with our rapid growth, is not demanded because of the unsafe character of our loans, but simply because the call for money is greatly in excess of the supply. There is no better criterion of the profit which ordinary investments return in a given locality than the interest and discount rates of the banks. In some of the Eastern States where interest rules at six and seven per cent. per annum, the ordinary cost of a year's house rent, multiplied by ten, indicates the market value of the premises rented, and this interest on real estate investments, approximates the usual bank rates of interest, after deducting the cost of insurance and taxes. The same rule applied here would probably show that there is not an improved piece of real estate in this vicinity under rental, which is not paying its owner the regular bank rate of interest upon its value; yet a thousand added dwellings a year appear to be inadequate to meet the demands of a rapidly increasing population.

The real secret of our high rates of interest is that the employment of capital here in any legitimate enterprise pays so largely that borrowers can make money in spite of high rates. It is a fact that a community, like an individual, cannot pay interest unless it is realizing with the money borrowed a profit somewhat larger than the interest paid; and it is equally true that it can pay, and pay profitably whatever rate is exacted, up to the point where the interest consumes the profit of the business. The gains to be realized from the use of borrowed capital, regulate the price which can be paid for money; and those gains depend chiefly upon the demand for the productions of the borrowed capital—in other words, the price to be profitably paid for money, depends upon what is to be done with the money.

Among older communities, possessing large accumulations of money, interest at the rate of twenty-four per cent. per annum, compounded monthly, would lead the borrower to speedy financial ruin, because, in the plethora of money, every avenue of trade and every channel of enterprise are filled with cheap capital, eager for investment; which fact reduces the profit on all varieties of business to its lowest standard. With our limited supply of money, competition in any line of business has never been carried to an injurious extent, while many enterprises which could not fail, if engaged in, to secure rich returns, await for their inauguration the good time coming when money can be had on long time and on unquestioned security, at 10 or 12 per cent. per annum, as is the case to-day in Chicago and San Francisco.

Capital seeks safety, and it is fair to say that few localities present the same elements of security which are found here. In all financial operations a consideration of the "moral hazard" is deemed to be of the first importance. A reputation for promptly meeting business engagements is worth more than money to any man, and that reputation has been fairly acquired by the business men of Utah. The merchants of New York seek the Utah trade with avidity, because experience has taught them that they have no safer customers than this Territory supplies. A "bad debt" is an anomaly with us, in spite of the fact that short credit is freely given by merchants to all respectable citizens. The head of a banking institution here informs the writer that only one unpaid indebtedness, amounting to about three hundred dollars, was held by his bank at the end of a three-years' extensive business, and that even that would ultimately be collected. The First National Bank of Salt Lake City declared a dividend of 50 per cent. on its entire capital in 1871; and the Deseret Bank—now the Deseret National Bank—divided 30 per cent. during the year prior to its organization under the national system.

From the success which has thus far attended banking and all other commercial enterprises in Utah, it is evident that business can here be conducted on a basis of security. In spite of this, the fact remains that there is ample, ready and profitable employment for a hundred times more capital than is now offered. There is a class of citizens who find it difficult to borrow upon any terms. These are the land-owners,—everywhere the best class of borrowers. By a provision in the act of Congress under which National Banks are organized, loans by these institutions upon real estate are strictly prohibited, thus closing the principal sources of supply to the class holding the soundest security. Private banks supply the demand of this important class to a limited extent, but even these give a preference to commercial paper and portable securities, for the reason that borrowers upon real property usually desire long loans, while 30-day loans are sought by the banks.

What we most need is abundant money to loan at fair rates, say 12 per cent per annum, on long time and on real estate security. Of this security we have an abundance, and if money could be had to improve it, it would be vastly increased. Our titles are probably the clearest in the world. In this, the principal city, our conveyance is from the United States Government, under date of April 1872. Very few transfers have been made and only a meagre list of mortgages appear on record, for the reason that before title passed from the Government, nobody would lend on it, and since that period the mines have attracted the attention of capitalists, instead of slower and safer investments in city property.

In effecting loans on real property here, the same rules which govern like transactions elsewhere, could be readily enforced. It would not usually be necessary to loan more then 50 per cent. of the value of property loaned upon, nor would the capitalist be required to loan on property the existing or possible rental of which would not pay the interest on the loan. Here, as elsewhere, the amount borrowed would not equal the value of the land, were the improvements to be removed or destroyed.

In addition to loans on real estate, a broad and inviting field exists for the capitalist who would be willing to place money for long terms, on paying stocks and bonds in railroad and other enterprises, and on first class endorsed paper. A very large amount of the money invested in Savings Banks in the Eastern States, could be securely employed here at more than double the rates current in New England, and the money thus loaned would be used to increase the value of the very security pledged for its payment. We do not suffer from the restrictions of any usury laws, and contracts for interest are readily enforced. It is fair to presume that capital will, when convinced of this state of facts, avail itself of the advantages to which we have here briefly alluded, and seek a locality in which rapid and substantial growth promises a safegard against the dangers usually attendant upon investments at high rates of interest.

TO PUBLIC ENTERPRIZES.

Fire and Life Insurance.

Utah has as yet no local fire insurance organizations, although a large number of American and European companies are represented here by agents. These agencies have done a profitable business, owing to the fact that premium rates have ruled high and that no losses have occurred thus far. We are unable to find a single instance in the entire history of this city in which insured property has been destroyed or damaged by fire to the amount of a single dollar. This fact, together with the additional one that not less than $100,000 is annually paid by citizens of Utah in fire insurance premiums, constitute this the "happy hunting-ground" of fire underwriters.

In the matter of life insurance the case is somewhat different. A large number of the life companies of the East and West have had agents here, but the business done by them has been small. A few still remain, but the larger number have withdrawn.

A local company, known as the "Mutual Life and Savings Society," organized here in the summer of 1871, has done a successful business from the beginning, and was, on the first day of January, 1873, carrying insurance to the amount of over one million dollars. The paid-up capital—$125,000—has been largely increased by the preminm funds and the high rates of interest which money commands. The death rate has been unusually low, owing to the salubrity and general healthfulness of the climate. The President, Frank Fuller, Esq., an experienced underwriter, has pushed the business of his company quietly but persistently and successfully, and has secured for it a high reputation for fair dealing and the prompt payment of claims. It is fair to class the Mutual Life and Savings Society among our thriving and permanent Financial Institutions.

TO RAILROADS.

Narrow Gauge Railroads.

There is a growing conviction in the minds of the general public that the narrow-gauge system of railroads possesses special advantages over the standard or any broader gauge. It has been claimed for the narrow-guage plan that its largely diminished cost will enable the property-holders along the route traversed, to construct and maintain this class of roads as they do highways, thereby protecting themselves from the exactions of powerful monopolies. It has furthermore been asserted that while the cost of constructing, equiping and running a narrow-gauge road is but 50 per cent of that of the standard gauge, the working capacity of the narrow is 80 per cent of that of the standard road.

This matter of gauges is as clearly arbitrary and fanciful as is that of the width of streets or sidewalks. The ordinary or standard gauge in general use in all countries since the fact first dawned upon the mind of the inventor that a steam-carriage could be made to run upon an iron track, and that by giving it great weight, sufficient traction would be secured to enable the carriage to draw a burden—is four feet eight and a half inches. There was no reason why this gauge should be adopted; there is equally no reason why it should be retained, except for the convenience of transferring rolling stock from one road to another. Its adoption was the result of accident. The first locomotive ever constructed was found, when completed, to measure exactly 4 feet 8½ inches from tread to tread, and the track was laid to fit it. Thus this gauge with its odd half inch, came to be the standard gauge, and a large proportion of all the railroads in the world adhere to it. But Americans are a progressive people, and accordingly they have here and there ignored the formal standard supplied by Great Britain, and have experimented with various gauges. Of the four hundred and ninety-three railroads in the United States, three hundred and seven employ the standard gauge; the remaining one hundred and eighty-six vary in gauge from three to six feet. Between and including these extremes there are no less than eighteen other gauges in operation.

The cost of constructing and operating a railroad of extreme width has long been known to be greater in proportion to its carrying capacity, than that of the narrow road. The Grand Trunk road, over one thousand miles long and having a six-feet gauge, has lately decided to reduce its track to the standard width; and it is rumored that the Erie will be compelled to take a like step to avoid absolute insolvency. If a reduction from six feet to four feet eight and a half inches is to elevate a non-paying road to the position of a profitable enterprise, is it not legitimate to inquire as to whether a reduction of twelve or eighteen and a half inches from the arbitrary and accidental grade might not largely increase the profits?

The fact is, steam is sure to be employed more largely in the future than it has ever been in the past. With this thought in view it becomes a matter of vast importance to us to determine how we shall manage to utilize it as a carrying agent, without the necessity of great initial expenditure. The attempt to employ steam carriages on common roads is a failure so far as quick traffic is concerned. It is evident, therefore, that rails must be used. Wooden rails have been tried in localities having hard timber in abundance, and have been found durable and satisfactory. Maine and Pennsylvania have scores of miles of wooden rails, over which an extensive traffic has been carried on for many years, and the system finds its warmest advocates in those who have observed its cheapness and excellence. But as the timber employed must be of the best quality, and as this immediate vicinity does not furnish suitable material, it is evident we must adhere to iron or steel rails.

No section of the United States is more deeply interested in "the war of the gauges"—as the earnest discussions elicited by the introduction of narrow-gauge roads has been termed—than Utah. Until the day shall happily arrive when she can convert her vast deposits of iron ore into pig metal, and thence into steel and iron rails, in her own blast-furnaces and rolling-mills, by every ton which she can lighten the rails and rolling stock for her roads, does she considerably enrich herself. The long lines of rail over which the materials for her railroads must be conveyed, receive a tariff which aggregates an enormous sum. If a mile of road of three feet gauge can be constructed with fifty tons of what is known as 30-pound iron, that is, 30 pounds per running yard of rail, instead of requiring 100 tons of 60-pound iron for the same length of four feet eight and a half inch road, the saving in the single item of freight is not less than $2,000. This proportionate saving is increased in all articles of rolling stock.

It is plain that there must be a limit somewhere to the reduction of the gauge, or with diminution will come a want of efficiency. The Legislature of Massachusetts a year ago appointed a commission to take testimony and report upon a minimum gauge, and on that report enacted the three feet gauge as the minimum standard for the State. In England, where the extreme narrow-gauge system originated, experiments made by the War Department have shown that an 18-inch gauge road, with a locomotive weighing four tons, and suitable rolling-stock, can be constructed and equiped at one-twelfth the cost of the broad-gauge road, and will do one-fourth the amount of work with nearly equal rapidity. The British Government have accordingly adopted the 18-inch gauge for war purposes, the result of their experiments having justified the conclusion that lines made on this plan are capable of carrying in sufficient quantities all kinds of military stores, including field artillery and siege guns of seven to ten tons weight; and also that these roads can be constructed to run through mountainous and swampy country with very slight preparation of the road-bed and with about the same rapidity of advance as that of a marching army. Of course these miniature roads are designed merely for temporary use and not for permanent traffic. As the necessity for their existence ceases in a given locality, the rails and ties—or rather longitudinal sleepers—are taken up and laid at some other point.

For a permanent roadway, it is hardly probable that a gauge of less than three feet will be largely employed. This is the gauge thus far adopted by the narrow-gauge roads in Utah and other mountain regions. It is claimed that a road upon this gauge, supplied with the most approved engines, gives the maximum of traffic-capacity, coupled with the minimum of dead weight. For simplicity in the construction of the road-bed in mountain districts, this gauge is all that can be desired. With short locomotives and cars, the "wheel-base" is made so small that very sharp curves can be turned without danger, thus saving the expense of costly rock-cuts and tunnels, because obviating the necessity for nearly straight lines. With great steam capacity and little dead weight, these compact locomotives climb vigorously up steep grades and around sharp curves, drawing their heavily-laden freight trains at the rate of ten and twelve miles per hour, at a much lower rate of initial and running cost than that of the standard gauge, even when the latter has no obstacles of grade or alignment to overcome.

In Norway, a mountainous country, having a large laboring population, the narrow gauge system has been adopted by the government to the exclusion of the wide roads; the fact having been established that passenger and freight traffic can thus be reduced one-half, by reason of the diminished cost of construction and the lessened wear and tear.

Considering the great amount of evidence now accessible, in support of this view, we reach the conclusion that the mineral districts of Utah must look to the narrow-gauge system of railroads for cheap and rapid transportation of men and material. Aside from the engineering difficulties attendant upon the employment of the broad-guage, its great cost will render it necessary that most of the capital invested must come from abroad, and it would be necessary to heavily tax the resources of our roads to meet the interest on this borrowed capital. The net annual income on the railroads of America is closely computed at five per cent of their cost; had the three-feet guage been originally adopted, the net profit of the same amount of traffic at the same rates would have been eighteen and three-quarters per cent upon cost—a total profit of $75,000,000 a year for the existing number of miles. It is evident that the employment of the accidental four feet eight-and-a-half inch guage—with its accompanying locomotives, weighing from thirty to sixty tons each, its passenger cars weighing twenty tons, its freight cars weighing from ten to fifteen tons—has been a source of gigantic loss to this nation, and that the remedy lies in the change which we have indicated. It must no longer be necessary to haul 268-100 tons of car in order to convey a single ton of freight, or 722 pounds of car to convey a passenger, as is now the case. We want light and strong structures adapted to the needs of our mountain traffic. Every canyon leading to a mining district must have its narrow-gauge road connecting with the main lines, which may be of any gauge, but which, for the sake of economy and uniformity, had better be of the gauge of the feeders. We predict that the gauge of the future is destined to be three feet. The average cost of this class of roads, fully equiped, for any section of Utah needing a railroad, will not exceed fifteen thousand dollars per mile. The estimated average cost of the road bed, ready for the ties, is four thousand dollars; the ties are worth fifty cents each, or one thousand three hundred dollars a mile. The citizens of the localities in which railroads are needed are generally ready and willing to furnish this much of labor and material, and to give land for depots, etc. They know that wherever a railroad passes, land doubles in value. They have not the money with which to buy fifty tons of thirty-pound iron for each mile of road, costing eighty-four dollars per ton in Pennsylvania, or four thousand two hundred dollars per mile, and nearly half that sum, in addition for freight; nor can they invest the needed sum in locomotives and rolling stock, but they are ready to pay the highest rate of interest known among business man for the use of the required money, and to share the management with the capitalists supplying it. The net profit of the narrow-gauge road from Sandy to Alta is estimated at double its cost annually; and this estimate is based upon the known traffic of 1872, divided by three, so as to reduce the cost of passage and freight to a reasonable standard. With the immense freighting business carried on between our mining and our agricultural districts, it is safe to say that hundreds of miles of narrow-gauge road could be built in this Territory, the business of which would pay the entire cost of construction and equipment together with all the running expenses, once in each year. The Territorial law under which railroads are built, is modeled after similar statutes in the Eastern States, and interposes no obstacles to railroad construction. The bill now pending before Congress, granting the right of way over the public lands to all who seek in good faith to construct railroads, will undoubtedly become a law; but should it fail the right is fully secured by the Act of Congress, approved on the 10th day of June, 1872, and no special legislation by Congress in individual cases is required.

We shall be glad if our hurried glance at this subject serves to arrest the attention of capitalists, and to hasten the time when the mountains with their hoarded wealth and the valleys with their abundance, shall freely interchange their products through the medium of steam, and over the iron rails with which the country is destined to be checkered whenever our needs and resources shall be widely known.

THE CLIMATE OF UTAH.

The following contribution from Dr. O. H. Congar, for many years a resident in the Territory, is valuable in support of the views already expressed in regard to the healthiness of the climate.

Editor of the Tribune:

Perhaps no greater variety of climate can be found upon our continent than is embraced within the latitudes of this Territory. Although it is within the limits of the North Temperate zone, lying between the 42d degree North and 37 deg. 30 sec. North latidude the climate of the extreme southern portion is quite semi-tropical, snow seldom falling and ice still more seldom forming during the winter months; there the vine, the fig and orange flourish, and cotton forms one of the staple products. That portion of Utah is called Dixie and is over or south of what is commonly called the rim of the great Utah basin. It may also be considered a dry climate, rain not falling in sufficient quantities to supply the needs of vegetation. The diseases liable in that region are of an intermittent character, principally miasmatical. So equable, however, is the climate that at no distant day it will become one of the most favored resorts for consumptive patients.

The altitude of that region is little less than that of the valleys within the great basin, being about 4,000 feet above sea level, but its climate is tempered by the sea breeze from the Pacific Ocean; the southeast trade-winds being perceptible during the winter months. Coming north, the rim of the basin is crossed in about the thirty-eighth and a-half parallel, and from that point also the altitude decreases gradually until you reach the Great Salt Lake. Throughont these numerous valleys, divided from each other by spurs of the principal ranges, the climate is quite uniform as to temperature until the northern limits of the great Lake are passed, when its modifying influences, perceptibly felt easterly and southerly of it, are here scarcely recognized. In this northerly portion the climate is the most rigorous, and is somewhat similar in winter to the temperature of northern Illinois, but less changeable. It is undoubtedly one of the most healthful portions of Utah. In other portions of the valley and in districts influenceed by the waters of great Salt Lake, the temperature in winter seldom falls below zero during the mild series of seasons which alternate with a series of colder seasons, the two forming a certain cycle of time. This, however, is common to other portions of the globe. In summer the mountain snows also exert a wholesome influence over the otherwise scorching heat, so that the nights are most delightful and invigorating to the invalid or weary pleasure-seeker. The climate in the mountain mining towns surrounding Salt Lake City is most desirable, not only for relieving the distressing symptoms of the consumptive, even of the phthisis form, if not too far advanced, but also of the asthmatic patient, and many in the incipient stages of these complaints would progress to a permanent cure by a sufficient sojourn in these mountain localities, or those compatible with them in other portions of the Territory.

Consumption is unnatural to this climate except in rare cases from idiopathic or troumatic causes. Considering the climatical effect upon the native population, or first settlers, it must be considered far preferable to the climate of the Eastern States in every respect. So far as adapting patients to climatical influences, the great Utah basin affords unlimited scope.

It must be borne in mind that in a mixed populatien like that of Utah, the exciting causes to disease and death are far more numerous than in older and more settled communities, hence the mortality reports cannot be regarded as correct data upon which to base calculations of the true value of this climate over that of others.

Endemic diseases prevail here among the adult population only in exceptional places, while various causes jointly conspire to render the mortality unnaturally large during the late summer and fall months among children of tender years, which cannot be justly chargeable to climatical influences. Owing to the stable character of the Utah climate—the absence of extremes of temperature—nervously sensitive people have almost absolute immunity from the unpleasant influences experienced at the East. I cannot therefore conclude otherwise (everything duly considered) than that Utah affords the most variable, pleasant and healthy climate to be found upon this continent.

O. H. CONGAR, M. D.

CONCLUSION.

WHAT UTAH MAY BECOME.

In closing the present review of THE RESOURCES OF UTAH AND STATISTICS OF PROGRESS FOR THE YEAR 1872, it is not out of place to indulge in some speculations regarding the future destiny of this favored portion of our common country. Nature seems to have set it apart as the future home of millions of the human family who shall aid each other in developing its wonderful resources and boundless wealth. As a permanent abode it is all that could be desired. The majestic mountain scenery, the healthful and invigorating climate, the pure supply of water from the mountain streams, the sulphur and other mineral springs, and the many other attractions; all combine to constitute it a desirable home. The peculiar diversity and great extent of the mineral resources, their relative value each to each for utilization, their adaptability for homogeneous action in the process of development by the skill and wisdom of man, the perfect harmony which exists in the positions they occupy towards each other, and the easiness of access to them by the aid of artificial means in the shape of railroads, all bear sufficient testimony to warrant an indulgence in the belief that Utah is destined to become the great treasure-house of the World.

The finger of time plainly indicates that the period has arrived when preparation should be made for supplying the wants of the hordes of people who, at no distant date, will inhabit these great valleys and plains extending from the Rocky Mountains to the Sierra Nevada, by the inauguration of a self-sustaining element. Agriculture and manufactures, which combined, constitute a nations wealth, must be fostered and encouraged by every available means, thereby furnishing a channel for the profitable employment of foreign capital. With silver, lead, iron and coal as the basis of wealth, opportunities are afforded for the growth of gigantic manufactories of every kind, indeed all that can be manufactured of a general nature in other States will ere long be manufacturod here, for the railroad will supply the operative with raw material, and such necessary machinery as is not produced at home; while Utah will become famous for special branches of manufacture growing out of its own resources of iron and lead, in which few, if any, of the States will be able to surpass her. A most important circumstance in calculating the basis of wealth, the opportunities for manufacturing industry, and the rapid expansion of Utah is the fact that she is net young, but over 25 years of age. She has close upon one hundred and thirty cities and settlements, with a population comprising upwards of one hundred thousand souls, whose wonderful organization has commanded universal admiration for industrial manifestations and solidity. Such a class of people are the bone and sinew of development, for they furnish the agricultural, or true basis of social and national greatness, giving a natural impetus to manufacturing and all other industrial pursuits From such favorable surroundings the people of Utah may fairly presume that very shortly a new and most important State possessed of boundless wealth, and all the elements of greatness with a geographical position surpassed by none, will be added to the bright galaxy of stars which ornament our national standard.

There are three or four points on the map of Utah which give promise of becoming very important ones in the history of the Territory. These are, the present site of Salt Lake City, the valley of Sanpete, Iron county and the neighborhood of the dividing line between Utah and Arizona.

Salt Lake City, whose population now is in the neighborhood of 20,000, having the start, will continue to be the great commercial emporium of the Territory, and distributing point for produce, manufactures and merchandise. To the northern portion of the Territory it will be what St. Louis and Chicago are to their respective surroundings. Ere long our merchants will become direct importers from Europe and elsewhere, for with the country's growth trade will assume proportions of such magnitude that strong competition will occur, and the accumulation of wealth will lower the value of money, thereby compelling wholesale houses to seek cheaper markets wherein to make their purchases, rather than the half-way establishments of New York, Philadelphia, Boston, St. Louis and Chicago. The outskirts and suburbs of Salt Lake City will be dotted over with factories and workshops from which the busy hum of industry will gladden the ear. The various lines of railroads entering at that point will at no distant date involve the necessity of erecting large works for manufacturing rolling stock and for carrying on repairs. Iron foundries and machine shops on an extensive scale will become indispensable necessities; and, in short, ere five years have passed over our heads, the whole features of the city will have undergone an entire change,

The next point of interest is the valley of Sanpete, a district noted for its extensive and valuable coal beds. Somewhere in this valley, on a line of railroad and at no distant date, the LABORATORY of the great Salt Lake basin will take its rank among the Birminghams and Pittsburgs of the world. The smelting of ores will also form a prominent feature in this valley, besides the manufacture of hardware, castings, and every description of ornamental work and building materials.

Further south we come to Iron County, where there is an abundance of iron mines, the ore from which in some cases is nearly pure, and equal in quality to any in the world. The railroads projected and in course of construction will be the means of rapidly opening up this valuable store of wealth, which has hitherto been isolated and useless for practical purposes. So soon as this important element in the industries of Utah is developed, we may count upon an entire change in our railroad systems and iron interests, for with the advantages derivable from home productions, we can at comparatively small cost continue the building of railroads to any needed extent, and besides, become large exporters of railroad and pig iron to adjacent States and Territories.

The completion of the Utah Southern Railroad to St. George or such other point further south as may be determined upon, will finally open up direct commercial relations with the districts through which the contemplated Southern Pacific Railroad will pass; and as a consequence a large city will spring into existence on our southern boundary, as the imported goods to supply our people south would in many cases be drawn from the port of San Diego in Southern California, which is destined at some future day to become a seaport of considerable importance on the Pacific Coast.

While these developments of our mineral resources are going on, and the progress in manufactures is keeping pace with it, an essential element to success must not be lost sight of viz: the agricultural interests of the country—for they are paramount to all others. The land here like that of ancient Egypt, Mesopotamia, Persia, India, China, Peru, Mexico, the Roman Empire, Lombardy, Spain, the South of France, Italy and portions of Great Britain required to make themproductive, an extensive system of irrigation. The fact of the large quantity of waste and barren land which attracts the eye is no argument against the quality of the soil. Nature has simply so ordered affairs that artificial means must be employed to make it available for the purposes of agriculture. The expense attendant on the process of irrigation is small in comparison with the beneficial results attendant thereon, and the great saving in cost of home production over that of importing the necessaries of life.

This important circumstance connected with the Domestic Economy of our country is of so vital a character that it cannot be too strongly impressed upon the mind of every member of the community. A portion of the super-abundant capital which will find its way here from abroad, and also, some belonging to our successful merchants, manufacturers and miners, cannot find a better or more profitable channel for investment than the construction of irrigating canals and ditches, and testing the feasability of artesian wells. The public should unite to memorialize Congress on the subject of making favorable concessions to those who undertake the reclamation of barren or swamp lands.

Z. C. M. I.

Groceries, Hardware & Crockery,

TOOLS, IMPLEMENTS AND STOVES.

DRY GOODS, STAPLE & FANCY NOTIONS,

Carpets, Oil Cloths,
UPHOLSTERY GOODS,
Clothing. Hats. Boots and Shoes.

Wall Paper, Bordering, Decorations.

Drugs, Chemicals, Patent Medicines,

WINES, LIQUORS, ALE AND PORTER.

Singer's Sewing Machines in variety.

BESPOKE BOOT AND SHOE DEPARTMENT,

LEATHER FINDINGS, BELTING, Etc.,

Produce, Grain, Butter, Eggs, etc.

Schuttler Wagons, Bob Sleds,

MACHINERY IN ALL ITS BRANCHES, &c., &c.

Wholesale Purchasers & Visitors
TO
SALT LAKE CITY

Will find the Largest Assortment of Merchandize in the several Departments of Z. C. M. I., as above, that can be seen in the West and all at fair prices.

H. B. CLAWSON, Sup't.

KIMBALL & LAWRENCE,

Salt Lake City, - Utah.

IMPO [illegible] WHOLESALE DEALERS IN

Groceries,
Builders' Hardware,
Harness Trimmings,
Agricultural Implements,
Mining Tools, Ore Sacks,
Boots and Shoes.

Depot for JONES' CELEBRATED PLOWS.

Prompt and Particular Attention Given to Orders.

STEP IN

TO

WALKER BROTHERS'

and examine their immense Stock of

Groceries, Provisions, Tobaccos,

MINING OUTFITS, Etc.,

The best Stock in Salt Lake City, carefully selected with a view to the Wants of the WHOLESALE TRADE.

AGENTS FOR

California Powder Mills.
Giant Powder Company.
Oriental Powder Company.
Grant's Mining Candles.
California Quicksilver.

WALKER BROS., Salt Lake City, Utah.

ESTABLISHED, 1859.

THE LEADING
Jewelry Establishment in Utah.

JOSLIN & PARK,
Manufacturing Jewelers,
AND DEALERS IN
Diamonds, Watches, Silverware, Clocks, etc.
Fine Native Gold and Silver Jewelry
OF EVERY DESCRIPTION.
Main St., Salt Lake City,

REPAIRING CAREFULLY AND PROMPTLY ATTENDED TO.

"Utah Fire Brick Company,"

WM. W. CHISHOLM, Prest. WM. T. MATHEWS, Sup't. C. W. BENNETT, Sec'y.

Manufactory at Salt Lake City.
Office, No. 90 Main St., Salt Lake City.

MUSEUM,
Opposite the Old Tabernacle, - **Salt Lake City,**
JOHN W. YOUNG, Proprietor.

UTAH AT A GLANCE.
Minerals, Ores, Home Products and Manufactures, Indian Curiosities, &c., &c. Open Daily from 9 a.m. to 6 p.m.

C. P. R. R.

On and after September 16, 1872, Trains will leave Ogden daily, as follows:

Overland Passenger Train for Toano, Carlin, Winnemucca, Wadsworth, Reno, Marysville, Redding, (for Oregon), Sacramento, Stockton, Lathrop, Merced (for Yosemite), Tipton (for Los Angeles), San Jose and San Francisco,.....5.20 P.M.
Overland Freight and Accomodation Train for San Francisco.....................5.25 P.M.

A. N. TOWNE, Gen'l Sup't.

T. H. GOODMAN, Gen. Pass. and Ticket Agt.

GEORGE H. RICE, Agent, Salt Lake City,
Office with Marshall & Carter, Over W. F. & Co.'s Bank.

UTAH SOUTHERN RAILROAD.

On and after December 20th, 1872, DAILY TRAINS

Leave the Utah Central Railroad Depot, Salt Lake City, at 7 a.m. and 2.30 p.m. Arrive at Lehi at 9 a.m. and 4.30 p.m. Leave Lehi at 9.30 a.m. and 5 p.m. Arrive at Salt Lake City at 11.30 a.m. and 7 p.m.

In addition to the above MIXED TRAINS

Will run daily, Sunday excepted, leaving the Utah Central Railroad Depot, Salt Lake City, at 1 p.m. and Lehi at 6 a.m.

Passengers will please purchase their tickets at the Offices. Fifty cents additional will be charged when the fare is collected on the train.

For all information concerning freight or passage, apply to

JAMES SHARP, Gen'l Freight and Ticket Agent.

JOHN SHARP, Superintendent.

UTAH NORTHERN RAILROAD.

TRAINS RUN BETWEEN

Brigham Junction with C. P. R. R. and Logan.

On and after February 1st, 1873, DAILY TRAINS

Leave Brigham Junction at 7 p.m. Arrive at Mendon, 9.50 p.m. Arrive at Logan 10.30 p.m. Leave Logan 9 a.m. Arrive at Mendon 9.40 a.m. Arrive at Brigham 12.30 p.m. to connect with trains for Ogden and Salt Lake City.

Trains Run on Salt Lake Time.

☞ Stages connect with Trains to and from Northern Settlements in Cache County TRI-WEEKLY.

FARES.

Between Logan and Salt Lake........	$5 00	Between Mendon and Salt Lake.......	$4 75
" " " Ogden...........	3 00	" " " Ogden..........	2 75

REDUCED RATES TO EXCURSION PARTIES.

Passengers will please purchase their Tickets at the Offices. For all information concerning Freight or Passage, apply to CHARLES NIBLEY, Gen'l Freight and Ticket Agt.

JOHN W. YOUNG, Gen'l Sup't.

UTAH CENTRAL RAILROAD.

PIONEER LINE OF UTAH.

On and after December 20th, 1872, DAILY TRAINS
Leave Salt Lake City at 5 a.m. and 2.45 p.m. Arrive at Ogden 7 a.m. and 4.45 p.m.
Leave Ogden at 8 a.m. and 5.30 p.m. Arrive at Salt Lake City 10 a.m. and 7.30 p.m.

In addition to the above MIXED TRAINS
Will run daily, Sundays excepted, leaving Salt Lake City at 8 a.m. and 5.30 p.m., and Ogden at 5 a.m. and 5.50 p.m.

Passengers will please purchase their Tickets at the Offices. Fifty cents additional will be charged when the fare is collected on the train.

For all information concerning Freight or Passage, apply to

JAMES SHARP, Gen'l Freight and Ticke gent,

JOHN SHARP, Superintendent.

LEN WINES'

Salt Lake & Ophir

STAGE & EXPRESS LINE,

Running Daily from Salt Lake City, via Lake Town, Tooele City, Stockton and Ophir.

The Route has been restocked with splendid Concord Coaches, Fine Stock, careful and attentive Drivers, and every attention is paid to the comfort and convenience of passengers.

Good Accomodation on the Road.

THROUGH BY DAYLIGHT.

Cheap Fare and Quick Time.

OFFICE AT WELLS, FARGO & CO'S., SALT LAKE CITY.

LEN WINES, Proprietor.

WALKER HOUSE,

Main Street, - Salt Lake City.

H. S. GREELEY & CO., Propr's.

Walker House Coach always in attendance on arrival of each Train.

G. A. McCONNELL & CO.,
AGENTS FOR THE
Purchase and Sale of Mines.

MINES SURVEYED AND EXAMINED.
Maps and Reports Prepared and General Mining Information Furnished.
Office, Six Doors East of Deseret National Bank,
P. O. Box 428. **SALT LAKE CITY.**

PHIL MARGETTS,
Wholesale and Retail Dealer in
Foreign & Domestic Malt Liquors,
No. 89 FIRST SOUTH STREET, SALT LAKE CITY.

Barclay, Perkins & Co's. Celebrated Brown Stout, Bottled.
Blood, Wolf & Co's. Celebrated Dublin Stout, "
Also the following Genuine English Ales, in Bottles:
BASS', TENNANT'S, BYASS', BLOOD'S and SWAN'S.
JOULE'S STAFFORDSHIRE ALE on Draught a Speciality.

ESTABLISHED 1855.
W. S. GODBE. J. H. LATEY.
GODBE & CO.,
DRUGGISTS,
Salt Lake City, Utah.

SALT LAKE HOUSE,
SALT LAKE CITY.

FIRST-CLASS BOARD, GOOD CLEAN BEDS,
Convenient to all the principal points of interest. Headquarters for Mining Information.
Prices from $2.50 to $3.00 per day.
STREET CARS PASS THE DOOR.
LAWRENCE & MANN, Propr's.

REAL ESTATE.

TRUE, BURNS & MARTIN,

RELIABLE

REAL ESTATE, MINING & LOAN BROKERS.

REAL ESTATE Bought and Sold. Houses and Stores Rented, Rents Collected, and all business connected with REAL ESTATE AND MINES promptly attended to.

No. 99 KIMBALL'S BLOCK,

SALT LAKE CITY, U. T.

H. M. TRUE.
JOHN L. BURNS.
HENRY MARTIN.

C. L. STEVENSON,

Civil & Mining Engineer,

And MINING AGENT,

Salt Lake City, - Utah

Particular attention paid to all business connected with Mines. U. S. Patents obtained. Surveys, Maps, Reports and Specifications made at short notice.

MINES BOUGHT AND SOLD.

A. S. GOULD & SON,

RE-ESTABLISHED 1873.

Conveyancers, Notaries Public, Searchers of Records,

And COMMISSIONERS OF DEEDS for all the States and Territories.

Applications for Patents, Mining Deeds, Agreements and bonds for Deeds, Mortgages, Powers of Attorney, Contracts, Leases and other instruments of writing, drawn with accuracy and dispatch.

Mining and other Companies Incorporated under the Laws of Utah.

Abstracts of titles to mining and other property made in the most complete form.
☞ **All business entrusted to this firm will be regarded as strictly private.**

ROOM NO. 4, OVER FIRST NATIONAL BANK,
MAIN STREET,
Salt Lake City, - - Utah Territory.

GEORGE C. BATES,

COUNSELLOR-AT-LAW.

Especial Attention given to Purchase and Sale of Mines,

And Examination of Title and Certificates thereto.

Five doors east of Deseret Bank.

J. C. CAMERON, Jr.,

MINING ENGINEER,

Office at C. W. Bennett's Law Office,

90 MAIN STREET, SALT LAKE CITY,

Inventor of a process for the Application of Oxygen to Metallurgical purposes, and the Bee-hive Charcoal Kiln,

Will examine and report upon mineral lands, complete surveys, maps and working plans, including Hoisting Machinery, Ventilation, Drainage, and furnish information necessary for the proper working of mines.

Will prepare plans, specifications and estimates for the construction of Iron, Silver-lead, Copper and other Furnaces, Blast Engines, etc., and Charcaol Kilns, with information and plans for the application of Hot Blast Ovens to Silver-lead Furnaces.

Particular attention given to the application of the Oxygen Oven to general metallurgical operations, whereby a saving is made of over fifty per cent. of fuel in present modes of metallurgy.

Refers by permission to the following named gentlemen:

ALEXANDER WINCHELL, L. L. D., Prest. Geological Survey, of Michigan.
ARTHUR B. MEEKER, Prest. Joliet Rolling Mill Co., 376 Wabash Ave., Chicago.
WM. H. HINER, Prest. Union Iron Works, Fon du Lac, Wis.
WM. W. CHISHOLM, Prest. Stoker Silver Mining Co., Salt Lake City, Utah.
C. W. BENNETT, Sec'y and Treas. Utah Fire Brick Co., Salt Lake City, Utah.
M. R. HUNT, Sec'y and Treas. National Iron Co., Depere, Wis.
JOHN H. ELY, Gen'l Manager Davenport Silver Mining Co., Salt Lake City, Utah.
J. E. MATTHEWS, Gen'l Manager Stoker Silver Mining Co., Salt Lake City, Utah.
J. F. BERRY, Gen'l Manager Gilberson Silver Mining Co., Salt Lake City, Utah.
FRANCIS FOWLER, M. I. C. E., 25 Great George Street, Westminster, London.
SIMON BAINBERGER & Co., Mining Brokers, 68 Maiden Lane, New York.
MAJ. T. B. BROOKS, Assistant on Geological Survey, Marquette, Michigan.

J. McVICKER,

Assayer,

MAIN ST., SALT LAKE CITY.

C. E. WHITNEY,

Attorney-at-Law,

Office over Daniel Grenig's Store,

MAIN ST., - SALT LAKE CITY.

JOSEPH GORLINSKI,

CIVIL ENGINEER,

United States Mineral and Deputy Surveyor for Utah.

Office, First South Street, nearly opposite St. Mark's Church.

J. B. MEADER,

ASSAYER.

3 Doors south of Salt Lake House,

MAIN ST., SALT LAKE CITY.

Agency for the Sale of Mines,

OFFICE IN GROESBECK'S BLOCK, Salt Lake City, Utah.

We have arrangements made for placing Utah Mines upon the markets in England, France and Germany, and many points in the United States.

Mining and other Companies incorporated under the Laws of Utah.

Abstracts of Titles to mining and other property made in the most complete form. Mining Property Examined and Reported on.

DEEDS ACKNOWLEDGED, CONVEYANCING.

Applications for Patents, Mining Deeds, Agreements and Bonds for Deeds, Mortgages, Powers of Attorney, Leases, Contracts and other instruments of writing drawn up with Accuracy and Dispatch. **Maps, Plats and Diagrams** of mines furnished on short notice. A UNITED STATES COMMISSIONER always in attendance to acknowledge Deeds.

SPICER & CO.

H. DINWOODEY,

WHOLESALE AND RETAIL DEALER IN

Furniture & Bedding,

SPRING MATTRESSES, &c..

Nos. 31 East Temple, and 75 1st South Streets.

SALT LAKE CITY.

DELMONICO

Restaurant & Oyster Rooms

85 First South St., Salt Lake City.

LADIES' DINING HALL AND ICE CREAM PARLOR UP STAIRS.

OPEN DAY AND NIGHT.

Private Supper and Dinner Parties Supplied on short notice.

J. W. CLARK, Proprietor.

JOHN CUNNINGTON. JOHN CHISLETT.

Cunnington & Co.

Quick Sales and Small Profits.

Groceries,
Hardware,
Ore Sacks.

STORE.

Wholesale and Retail Dealers in

Groceriers, Hardware,

Ore Sacks and Miners' Outfitting.

Cor. of MAIN and SECOND SOUTH STS.,

SALT LAKE CITY.

JAMES M. CARTER,

ATTORNEY-AT-LAW,

Office over First National Bank.

MAIN ST., - SALT LAKE CITY.

J. C. CAMERON, Jr.,

MINING ENGINEER,

Office at C. W. Bennett's Law Office,

90 MAIN STREET, SALT LAKE CITY,

Inventor of a process for the Application of Oxygen to Metallurgical purposes, and the Bee-hive Charcoal Kiln,

Will examine and report upon mineral lands, complete surveys, maps and working plans, including Hoisting Machinery, Ventilation, Drainage, and furnish information necessary for the proper working of mines.

Will prepare plans, specifications and estimates for the construction of Iron, Silver-lead, Copper and other Furnaces, Blast Engines, etc., and Charcaol Kilns, with information and plans for the application of Hot Blast Ovens to Silver-lead Furnaces.

Particular attention given to the application of the Oxygen Oven to general metallurgical operations, whereby a saving is made of over fifty per cent. of fuel in present modes of metallurgy.

Refers by permission to the following named gentlemen:

ALEXANDER WINCHELL, L. L. D., Prest. Geological Survey, of Michigan.
ARTHUR B. MEEKER, Prest. Joliet Rolling Mill Co., 376 Wabash Ave., Chicago.
WM. H. HINER, Prest. Union Iron Works, Fon du Lac, Wis.
WM. W. CHISHOLM, Prest. Stoker Silver Mining Co., Salt Lake City, Utah.
C. W. BENNETT, Sec'y and Treas. Utah Fire Brick Co., Salt Lake City, Utah.
M. R. HUNT, Sec'y and Treas. National Iron Co., Depere, Wis.
JOHN H. ELY, Gen'l Manager Davenport Silver Mining Co., Salt Lake City, Utah.
J. E. MATTHEWS, Gen'l Manager Stoker Silver Mining Co., Salt Lake City, Utah.
J. F. BERRY, Gen'l Manager Gilberson Silver Mining Co., Salt Lake City, Utah.
FRANCIS FOWLER, M. I. C. E., 25 Great George Street, Westminster, London.
SIMON BAINBERGER & Co., Mining Brokers, 68 Maiden Lane, New York.
MAJ. T. B. BROOKS, Assistant on Geological Survey, Marquette, Michigan.

J. McVICKER,

Assayer,

MAIN ST., SALT LAKE CITY.

C. E. WHITNEY,

Attorney-at-Law,

Office over Daniel Grenig's Store,

MAIN ST., - SALT LAKE CITY.

JOSEPH GORLINSKI,

CIVIL ENGINEER,

United States Mineral and Deputy Surveyor for Utah.

Office, First South Street, nearly opposite St. Mark's Church.

J. B. MEADER,

ASSAYER,

3 Doors south of Salt Lake House,

MAIN ST., SALT LAKE CITY.

Agency for the Sale of Mines,

OFFICE IN GROESBECK'S BLOCK, Salt Lake City, Utah.

We have arrangements made for placing Utah Mines upon the markets in England, France and Germany, and many points in the United States.

Mining and other Companies incorporated under the Laws of Utah.

Abstracts of Titles to mining and other property made in the most complete form. Mining Property Examined and Reported on.

DEEDS ACKNOWLEDGED, CONVEYANCING.

Applications for Patents, Mining Deeds, Agreements and Bonds for Deeds, Mortgages, Powers of Attorney, Leases, Contracts and other instruments of writing drawn up with Accuracy and Dispatch. **Maps, Plats and Diagrams** of mines furnished on short notice. A UNITED STATES COMMISSIONER always in attendance to acknowledge Deeds.

SPICER & CO.

H. DINWOODEY,

WHOLESALE AND RETAIL DEALER IN

Furniture & Bedding,

SPRING MATTRESSES, &c..

Nos. 31 East Temple, and 75 1st South Streets.

SALT LAKE CITY.

DELMONICO

Restaurant & Oyster Rooms

85 First South St., Salt Lake City.

LADIES' DINING HALL AND ICE CREAM PARLOR UP STAIRS.

OPEN DAY AND NIGHT.

Private Supper and Dinner Parties Supplied on short notice.

J. W. CLARK, Proprietor.

J. C. CAMERON, Jr.,

MINING ENGINEER,

Office at C. W. Bennett's Law Office,

90 MAIN STREET, SALT LAKE CITY,

Inventor of a process for the Application of Oxygen to Metallurgical purposes, and the Bee-hive Charcoal Kiln,

Will examine and report upon mineral lands, complete surveys, maps and working plans, including Hoisting Machinery, Ventilation, Drainage, and furnish information necessary for the proper working of mines.

Will prepare plans, specifications and estimates for the construction of Iron, Silver-lead, Copper and other Furnaces, Blast Engines, etc., and Charcaol Kilns, with information and plans for the application of Hot Blast Ovens to Silver-lead Furnaces.

Particular attention given to the application of the Oxygen Oven to general metallurgical operations, whereby a saving is made of over fifty per cent. of fuel in present modes of metallurgy.

Refers by permission to the following named gentlemen:

ALEXANDER WINCHELL, L. L. D., Prest. Geological Survey, of Michigan.
ARTHUR B. MEEKER, Prest. Joliet Rolling Mill Co., 376 Wabash Ave., Chicago.
WM. H. HINER, Prest. Union Iron Works, Fon du Lac, Wis.
WM. W. CHISHOLM, Prest. Stoker Silver Mining Co., Salt Lake City, Utah.
C. W. BENNETT, Sec'y and Treas. Utah Fire Brick Co., Salt Lake City, Utah.
M. R. HUNT, Sec'y and Treas. National Iron Co., Depere, Wis.
JOHN H. ELY, Gen'l Manager Davenport Silver Mining Co., Salt Lake City, Utah.
J. E. MATTHEWS, Gen'l Manager Stoker Silver Mining Co., Salt Lake City, Utah.
J. F. BERRY, Gen'l Manager Gilberson Silver Mining Co., Salt Lake City, Utah.
FRANCIS FOWLER, M. I. C. E., 25 Great George Street, Westminster, London.
SIMON BAINBERGER & Co., Mining Brokers, 68 Maiden Lane, New York.
MAJ. T. B. BROOKS, Assistant on Geological Survey, Marquette, Michigan.

J. McVICKER,

Assayer,

MAIN ST., SALT LAKE CITY.

C. E. WHITNEY,

Attorney-at-Law,

Office over Daniel Grenig's Store,

MAIN ST., - SALT LAKE CITY.

JOSEPH GORLINSKI,

CIVIL ENGINEER,

United States Mineral and Deputy Surveyor for Utah.

Office, First South Street, nearly opposite St. Mark's Church.

J. B. MEADER,

ASSAYER.

3 Doors south of Salt Lake House,

MAIN ST., SALT LAKE CITY.

Agency for the Sale of Mines,

OFFICE IN GROESBECK'S BLOCK, Salt Lake City, Utah.

We have arrangements made for placing Utah Mines upon the markets in England, France and Germany, and many points in the United States.

Mining and other Companies incorporated under the Laws of Utah.

Abstracts of Titles to mining and other property made in the most complete form. Mining Property Examined and Reported on.

DEEDS ACKNOWLEDGED, CONVEYANCING.

Applications for Patents, Mining Deeds, Agreements and Bonds for Deeds, Mortgages, Powers of Attorney, Leases, Contracts and other instruments of writing drawn up with Accuracy and Dispatch. **Maps, Plats and Diagrams** of mines furnished on short notice. A UNITED STATES COMMISSIONER always in attendance to acknowledge Deeds.

SPICER & CO.

H. DINWOODEY,

Wholesale and Retail Dealer in

Furniture & Bedding,

SPRING MATTRESSES, &c..

Nos. 31 East Temple, and 75 1st South Streets.

SALT LAKE CITY.

DELMONICO

Restaurant & Oyster Rooms

85 First South St., Salt Lake City.

LADIES' DINING HALL AND ICE CREAM PARLOR UP STAIRS.

OPEN DAY AND NIGHT.

Private Supper and Dinner Parties Supplied on short notice.

J. W. CLARK, Proprietor.

J. C. CAMERON, Jr.,

MINING ENGINEER,

Office at C. W. Bennett's Law Office,

90 MAIN STREET, SALT LAKE CITY,

Inventor of a process for the Application of Oxygen to Metallurgical purposes, and the Bee-hive Charcoal Kiln,

Will examine and report upon mineral lands, complete surveys, maps and working plans, including Hoisting Machinery, Ventilation, Drainage, and furnish information necessary for the proper working of mines.

Will prepare plans, specifications and estimates for the construction of Iron, Silver-lead, Copper and other Furnaces, Blast Engines, etc., and Charcaol Kilns, with information and plans for the application of Hot Blast Ovens to Silver-lead Furnaces.

Particular attention given to the application of the Oxygen Oven to general metallurgical operations, whereby a saving is made of over fifty per cent. of fuel in present modes of metallurgy.

Refers by permission to the following named gentlemen:

Alexander Winchell, L. L. D., Prest. Geological Survey, of Michigan.
Arthur B. Meeker, Prest. Joliet Rolling Mill Co., 376 Wabash Ave., Chicago.
Wm. H. Hiner, Prest. Union Iron Works, Fon du Lac, Wis.
Wm. W. Chisholm, Prest. Stoker Silver Mining Co., Salt Lake City, Utah.
C. W. Bennett, Sec'y and Treas. Utah Fire Brick Co., Salt Lake City, Utah.
M. R. Hunt, Sec'y and Treas. National Iron Co., Depere, Wis.
John H. Ely, Gen'l Manager Davenport Silver Mining Co., Salt Lake City, Utah.
J. E. Matthews, Gen'l Manager Stoker Silver Mining Co., Salt Lake City, Utah.
J. F. Berry, Gen'l Manager Gilberson Silver Mining Co., Salt Lake City, Utah.
Francis Fowler, M. I. C. E., 25 Great George Street, Westminster, London.
Simon Bainberger & Co., Mining Brokers, 68 Maiden Lane, New York.
Maj. T. B. Brooks, Assistant on Geological Survey, Marquette, Michigan.

J. McVICKER,

Assayer,

MAIN ST., SALT LAKE CITY.

JOSEPH GORLINSKI,

CIVIL ENGINEER,

United States Mineral and Deputy Surveyor for Utah.

Office, First South Street, nearly opposite St. Mark's Church.

C. E. WHITNEY,

Attorney-at-Law,

Office over Daniel Grenig's Store,

MAIN ST., - SALT LAKE CITY.

J. B. MEADER,

ASSAYER,

3 Doors south of Salt Lake House,

MAIN ST., SALT LAKE CITY.

Agency for the Sale of Mines,

OFFICE IN GROESBECK'S BLOCK, Salt Lake City, Utah.

We have arrangements made for placing Utah Mines upon the markets in England, France and Germany, and many points in the United States.

Mining and other Companies incorporated under the Laws of Utah.

Abstracts of Titles to mining and other property made in the most complete form. Mining Property Examined and Reported on.

DEEDS ACKNOWLEDGED, CONVEYANCING.

Applications for Patents, Mining Deeds, Agreements and Bonds for Deeds, Mortgages, Powers of Attorney, Leases, Contracts and other instruments of writing drawn up with Accuracy and Dispatch. **Maps, Plats and Diagrams** of mines furnished on short notice. A UNITED STATES COMMISSIONER always in attendance to acknowledge Deeds.

SPICER & CO.

H. DINWOODEY,

WHOLESALE AND RETAIL DEALER IN

Furniture & Bedding,

SPRING MATTRESSES, &c..

Nos. 31 East Temple, and 75 1st South Streets.

SALT LAKE CITY.

DELMONICO

Restaurant & Oyster Rooms

85 First South St., Salt Lake City.

LADIES' DINING HALL AND ICE CREAM PARLOR UP STAIRS.

OPEN DAY AND NIGHT.

Private Supper and Dinner Parties Supplied on short notice.

J. W. CLARK, Proprietor.

J. C. CAMERON, Jr.,

MINING ENGINEER,

Office at C. W. Bennett's Law Office,

90 MAIN STREET, SALT LAKE CITY,

Inventor of a process for the Application of Oxygen to Metallurgical purposes, and the Bee-hive Charcoal Kiln,

Will examine and report upon mineral lands, complete surveys, maps and working plans, including Hoisting Machinery, Ventilation, Drainage, and furnish information necessary for the proper working of mines.

Will prepare plans, specifications and estimates for the construction of Iron, Silver-lead, Copper and other Furnaces, Blast Engines, etc., and Charcaol Kilns, with information and plans for the application of Hot Blast Ovens to Silver-lead Furnaces.

Particular attention given to the application of the Oxygen Oven to general metallurgical operations, whereby a saving is made of over fifty per cent. of fuel in present modes of metallurgy.

Refers by permission to the following named gentlemen:

Alexander Winchell, L. L. D., Prest. Geological Survey, of Michigan.
Arthur B. Meeker, Prest. Joliet Rolling Mill Co., 376 Wabash Ave., Chicago.
Wm. H. Hiner, Prest. Union Iron Works, Fon du Lac, Wis.
Wm. W. Chisholm, Prest. Stoker Silver Mining Co., Salt Lake City, Utah.
C. W. Bennett, Sec'y and Treas. Utah Fire Brick Co., Salt Lake City, Utah.
M. R. Hunt, Sec'y and Treas. National Iron Co., Depere, Wis.
John H. Ely, Gen'l Manager Davenport Silver Mining Co., Salt Lake City, Utah.
J. E. Matthews, Gen'l Manager Stoker Silver Mining Co., Salt Lake City, Utah.
J. F. Berry, Gen'l Manager Gilberson Silver Mining Co., Salt Lake City, Utah.
Francis Fowler, M. I. C. E., 25 Great George Street, Westminster, London.
Simon Bainberger & Co., Mining Brokers, 68 Maiden Lane, New York.
Maj. T. B. Brooks, Assistant on Geological Survey, Marquette, Michigan.

J. McVICKER,

Assayer,

MAIN ST., SALT LAKE CITY.

C. E. WHITNEY,

Attorney-at-Law,

Office over Daniel Grenig's Store,
MAIN ST., - SALT LAKE CITY.

JOSEPH GORLINSKI,

CIVIL ENGINEER,
United States Mineral and Deputy Surveyor for Utah.

Office, First South Street, nearly opposite St. Mark's Church.

J. B. MEADER,

ASSAYER,

3 Doors south of Salt Lake House,
MAIN ST., SALT LAKE CITY.

Agency for the Sale of Mines,

OFFICE IN GROESBECK'S BLOCK, Salt Lake City, Utah.

We have arrangements made for placing Utah Mines upon the markets in England, France and Germany, and many points in the United States.

Mining and other Companies incorporated under the Laws of Utah.

Abstracts of Titles to mining and other property made in the most complete form. Mining Property Examined and Reported on.

DEEDS ACKNOWLEDGED, CONVEYANCING.

Applications for Patents, Mining Deeds, Agreements and Bonds for Deeds, Mortgages, Powers of Attorney, Leases, Contracts and other instruments of writing drawn up with Accuracy and Dispatch. **Maps, Plats and Diagrams** of mines furnished on short notice. A UNITED STATES COMMISSIONER always in attendance to acknowledge Deeds.

SPICER & CO.

H. DINWOODEY,

WHOLESALE AND RETAIL DEALER IN

Furniture & Bedding,

SPRING MATTRESSES, &c..

Nos. 31 East Temple, and 75 1st South Streets.

SALT LAKE CITY.

DELMONICO

Restaurant & Oyster Rooms

85 First South St., Salt Lake City.

LADIES' DINING HALL AND ICE CREAM PARLOR UP STAIRS.

OPEN DAY AND NIGHT.

Private Supper and Dinner Parties Supplied on short notice.

J. W. CLARK, Proprietor.

J. C. CAMERON, Jr.,

MINING ENGINEER,

Office at C. W. Bennett's Law Office,

90 MAIN STREET, SALT LAKE CITY,

Inventor of a process for the Application of Oxygen to Metallurgical purposes, and the Bee-hive Charcoal Kiln,

Will examine and report upon mineral lands, complete surveys, maps and working plans, including Hoisting Machinery, Ventilation, Drainage, and furnish information necessary for the proper working of mines.

Will prepare plans, specifications and estimates for the construction of Iron, Silver-lead, Copper and other Furnaces, Blast Engines, etc., and Charcaol Kilns, with information and plans for the application of Hot Blast Ovens to Silver-lead Furnaces.

Particular attention given to the application of the Oxygen Oven to general metallurgical operations, whereby a saving is made of over fifty per cent. of fuel in present modes of metallurgy.

Refers by permission to the following named gentlemen:

Alexander Winchell, L. L. D., Prest. Geological Survey, of Michigan.
Arthur B. Meeker, Prest. Joliet Rolling Mill Co., 376 Wabash Ave., Chicago.
Wm. H. Hiner, Prest. Union Iron Works, Fon du Lac, Wis.
Wm. W. Chisholm, Prest. Stoker Silver Mining Co., Salt Lake City, Utah.
C. W. Bennett, Sec'y and Treas. Utah Fire Brick Co., Salt Lake City, Utah.
M. R. Hunt, Sec'y and Treas. National Iron Co., Depere, Wis.
John H. Ely, Gen'l Manager Davenport Silver Mining Co., Salt Lake City, Utah.
J. E. Matthews, Gen'l Manager Stoker Silver Mining Co., Salt Lake City, Utah.
J. F. Berry, Gen'l Manager Gilberson Silver Mining Co., Salt Lake City, Utah.
Francis Fowler, M. I. C. E., 25 Great George Street, Westminster, London.
Simon Bainberger & Co., Mining Brokers, 68 Maiden Lane, New York.
Maj. T. B. Brooks, Assistant on Geological Survey, Marquette, Michigan.

J. McVICKER,

Assayer,

MAIN ST., SALT LAKE CITY.

C. E. WHITNEY,

Attorney-at-Law,

Office over Daniel Grenig's Store,
MAIN ST., - SALT LAKE CITY.

JOSEPH GORLINSKI,

CIVIL ENGINEER,
United States Mineral and Deputy Surveyor for Utah.

Office, First South Street, nearly opposite St. Mark's Church.

J. B. MEADER,

ASSAYER,

3 Doors south of Salt Lake House,
MAIN ST., SALT LAKE CITY.

Agency for the Sale of Mines,

OFFICE IN GROESBECK'S BLOCK, Salt Lake City, Utah.

We have arrangements made for placing Utah Mines upon the markets in England, France and Germany, and many points in the United States.

Mining and other Companies incorporated under the Laws of Utah.

Abstracts of Titles to mining and other property made in the most complete form. Mining Property Examined and Reported on.

DEEDS ACKNOWLEDGED, CONVEYANCING.

Applications for Patents, Mining Deeds, Agreements and Bonds for Deeds, Mortgages, Powers of Attorney, Leases, Contracts and other instruments of writing drawn up with Accuracy and Dispatch. **Maps, Plats and Diagrams** of mines furnished on short notice. A UNITED STATES COMMISSIONER always in attendance to acknowledge Deeds.

SPICER & CO.

H. DINWOODEY,

WHOLESALE AND RETAIL DEALER IN

Furniture & Bedding,

SPRING MATTRESSES, &c..

Nos. 31 East Temple, and 75 1st South Streets.

SALT LAKE CITY.

DELMONICO

Restaurant & Oyster Rooms

85 First South St., Salt Lake City.

LADIES' DINING HALL AND ICE CREAM PARLOR UP STAIRS.

OPEN DAY AND NIGHT.

Private Supper and Dinner Parties Supplied on short notice.

J. W. CLARK, Proprietor.

J. C. CAMERON, Jr.,

MINING ENGINEER,

Office at C. W. Bennett's Law Office,

90 MAIN STREET, SALT LAKE CITY,

Inventor of a process for the Application of Oxygen to Metallurgical purposes, and the Bee-hive Charcoal Kiln,

Will examine and report upon mineral lands, complete surveys, maps and working plans, including Hoisting Machinery, Ventilation, Drainage, and furnish information necessary for the proper working of mines.

Will prepare plans, specifications and estimates for the construction of Iron, Silver-lead, Copper and other Furnaces, Blast Engines, etc., and Charcaol Kilns, with information and plans for the application of Hot Blast Ovens to Silver-lead Furnaces.

Particular attention given to the application of the Oxygen Oven to general metallurgical operations, whereby a saving is made of over fifty per cent. of fuel in present modes of metallurgy.

Refers by permission to the following named gentlemen:

ALEXANDER WINCHELL, L. L. D., Prest. Geological Survey, of Michigan.
ARTHUR B. MEEKER, Prest. Joliet Rolling Mill Co., 376 Wabash Ave., Chicago.
WM. H. HINER, Prest. Union Iron Works, Fon du Lac, Wis.
WM. W. CHISHOLM, Prest. Stoker Silver Mining Co., Salt Lake City, Utah.
C. W. BENNETT, Sec'y and Treas. Utah Fire Brick Co., Salt Lake City, Utah.
M. R. HUNT, Sec'y and Treas. National Iron Co., Depere, Wis.
JOHN H. ELY, Gen'l Manager Davenport Silver Mining Co., Salt Lake City, Utah.
J. E. MATTHEWS, Gen'l Manager Stoker Silver Mining Co., Salt Lake City, Utah.
J. F. BERRY, Gen'l Manager Gilberson Silver Mining Co., Salt Lake City, Utah.
FRANCIS FOWLER, M. I. C. E., 25 Great George Street, Westminster, London.
SIMON BAINBERGER & Co., Mining Brokers, 68 Maiden Lane, New York.
MAJ. T. B. BROOKS, Assistant on Geological Survey, Marquette, Michigan.

J. McVICKER,

Assayer,

MAIN ST., SALT LAKE CITY.

C. E. WHITNEY,

Attorney-at-Law,

Office over Daniel Grenig's Store,
MAIN ST., - SALT LAKE CITY.

JOSEPH GORLINSKI,

CIVIL ENGINEER,

United States Mineral and Deputy Surveyor for Utah.

Office, First South Street, nearly opposite St. Mark's Church.

J. B. MEADER,

ASSAYER,

3 Doors south of Salt Lake House,
MAIN ST., SALT LAKE CITY.

Agency for the Sale of Mines,

OFFICE IN GROESBECK'S BLOCK, Salt Lake City, Utah.

We have arrangements made for placing Utah Mines upon the markets in England, France and Germany, and many points in the United States.

Mining and other Companies incorporated under the Laws of Utah.

Abstracts of Titles to mining and other property made in the most complete form. Mining Property Examined and Reported on.

DEEDS ACKNOWLEDGED, CONVEYANCING.

Applications for Patents, Mining Deeds, Agreements and Bonds for Deeds, Mortgages, Powers of Attorney, Leases, Contracts and other instruments of writing drawn up with Accuracy and Dispatch. **Maps, Plats and Diagrams** of mines furnished on short notice. A UNITED STATES COMMISSIONER always in attendance to acknowledge Deeds.

SPICER & CO.

H. DINWOODEY,

WHOLESALE AND RETAIL DEALER IN

Furniture & Bedding,

SPRING MATTRESSES, &c..

Nos. 31 East Temple, and 75 1st South Streets.

SALT LAKE CITY.

DELMONICO

Restaurant & Oyster Rooms

85 First South St., Salt Lake City.

LADIES' DINING HALL AND ICE CREAM PARLOR UP STAIRS.

OPEN DAY AND NIGHT.

Private Supper and Dinner Parties Supplied on short notice.

J. W. CLARK, Proprietor.

J. C. CAMERON, Jr.,

MINING ENGINEER,

Office at C. W. Bennett's Law Office,

90 MAIN STREET, SALT LAKE CITY,

Inventor of a process for the Application of Oxygen to Metallurgical purposes, and the Bee-hive Charcoal Kiln,

Will examine and report upon mineral lands, complete surveys, maps and working plans, including Hoisting Machinery, Ventilation, Drainage, and furnish information necessary for the proper working of mines.

Will prepare plans, specifications and estimates for the construction of Iron, Silver-lead, Copper and other Furnaces, Blast Engines, etc., and Charcaol Kilns, with information and plans for the application of Hot Blast Ovens to Silver-lead Furnaces.

Particular attention given to the application of the Oxygen Oven to general metallurgical operations, whereby a saving is made of over fifty per cent. of fuel in present modes of metallurgy.

Refers by permission to the following named gentlemen:

ALEXANDER WINCHELL, L. L. D., Prest. Geological Survey, of Michigan.
ARTHUR B. MEEKER, Prest. Joliet Rolling Mill Co., 376 Wabash Ave., Chicago.
WM. H. HINER, Prest. Union Iron Works, Fon du Lac, Wis.
WM. W. CHISHOLM, Prest. Stoker Silver Mining Co., Salt Lake City, Utah.
C. W. BENNETT, Sec'y and Treas. Utah Fire Brick Co., Salt Lake City, Utah.
M. R. HUNT, Sec'y and Treas. National Iron Co., Depere, Wis.
JOHN H. ELY, Gen'l Manager Davenport Silver Mining Co., Salt Lake City, Utah.
J. E. MATTHEWS, Gen'l Manager Stoker Silver Mining Co., Salt Lake City, Utah.
J. F. BERRY, Gen'l Manager Gilberson Silver Mining Co., Salt Lake City, Utah.
FRANCIS FOWLER, M. I. C. E., 25 Great George Street, Westminster, London.
SIMON BAINBERGER & Co., Mining Brokers, 68 Maiden Lane, New York.
MAJ. T. B. BROOKS, Assistant on Geological Survey, Marquette, Michigan.

J. McVICKER,

Assayer,

MAIN ST., SALT LAKE CITY.

C. E. WHITNEY,

Attorney-at-Law,

Office over Daniel Grenig's Store,

MAIN ST., - SALT LAKE CITY.

JOSEPH GORLINSKI,

CIVIL ENGINEER,

United States Mineral and Deputy Surveyor for Utah.

Office, First South Street, nearly opposite St. Mark's Church.

J. B. MEADER,

ASSAYER,

3 Doors south of Salt Lake House,

MAIN ST., SALT LAKE CITY.

Agency for the Sale of Mines,

OFFICE IN GROESBECK'S BLOCK, Salt Lake City, Utah.

We have arrangements made for placing Utah Mines upon the markets in England, France and Germany, and many points in the United States.

Mining and other Companies incorporated under the Laws of Utah.

Abstracts of Titles to mining and other property made in the most complete form. Mining Property Examined and Reported on.

DEEDS ACKNOWLEDGED, CONVEYANCING.

Applications for Patents, Mining Deeds, Agreements and Bonds for Deeds, Mortgages, Powers of Attorney, Leases. Contracts and other instruments of writing drawn up with Accuracy and Dispatch. **Maps, Plats and Diagrams** of mines furnished on short notice. A UNITED STATES COMMISSIONER always in attendance to acknowledge Deeds.

SPICER & CO.

H. DINWOODEY,

WHOLESALE AND RETAIL DEALER IN

Furniture & Bedding,

SPRING MATTRESSES, &c..

Nos. 31 East Temple, and 75 1st South Streets.

SALT LAKE CITY.

DELMONICO

Restaurant & Oyster Rooms

85 First South St., Salt Lake City.

LADIES' DINING HALL AND ICE CREAM PARLOR UP STAIRS.

OPEN DAY AND NIGHT.

Private Supper and Dinner Parties Supplied on short notice.

J. W. CLARK, Proprietor.

J. C. CAMERON, Jr.,

MINING ENGINEER,

Office at C. W. Bennett's Law Office,

90 MAIN STREET, SALT LAKE CITY,

Inventor of a process for the Application of Oxygen to Metallurgical purposes, and the Bee-hive Charcoal Kiln,

Will examine and report upon mineral lands, complete surveys, maps and working plans, including Hoisting Machinery, Ventilation, Drainage, and furnish information necessary for the proper working of mines.

Will prepare plans, specifications and estimates for the construction of Iron, Silver-lead, Copper and other Furnaces, Blast Engines, etc., and Charcaol Kilns, with information and plans for the application of Hot Blast Ovens to Silver-lead Furnaces.

Particular attention given to the application of the Oxygen Oven to general metallurgical operations, whereby a saving is made of over fifty per cent. of fuel in present modes of metallurgy.

Refers by permission to the following named gentlemen:

Alexander Winchell, L. L. D., Prest. Geological Survey, of Michigan.
Arthur B. Meeker, Prest. Joliet Rolling Mill Co., 376 Wabash Ave., Chicago.
Wm. H. Hiner, Prest. Union Iron Works, Fon du Lac, Wis.
Wm. W. Chisholm, Prest. Stoker Silver Mining Co., Salt Lake City, Utah.
C. W. Bennett, Sec'y and Treas. Utah Fire Brick Co., Salt Lake City, Utah.
M. R. Hunt, Sec'y and Treas. National Iron Co., Depere, Wis.
John H. Ely, Gen'l Manager Davenport Silver Mining Co., Salt Lake City, Utah.
J. E. Matthews, Gen'l Manager Stoker Silver Mining Co., Salt Lake City, Utah.
J. F. Berry, Gen'l Manager Gilberson Silver Mining Co., Salt Lake City, Utah.
Francis Fowler, M. I. C. E., 25 Great George Street, Westminster, London.
Simon Bainberger & Co., Mining Brokers, 68 Maiden Lane, New York.
Maj. T. B. Brooks, Assistant on Geological Survey, Marquette, Michigan.

J. McVICKER,

Assayer,

MAIN ST., SALT LAKE CITY.

C. E. WHITNEY,

Attorney-at-Law,

Office over Daniel Grenig's Store,

MAIN ST., - SALT LAKE CITY.

JOSEPH GORLINSKI,

CIVIL ENGINEER,

United States Mineral and Deputy Surveyor for Utah.

Office, First South Street, nearly opposite St. Mark's Church.

J. B. MEADER,

ASSAYER,

3 Doors south of Salt Lake House,

MAIN ST., SALT LAKE CITY.

Agency for the Sale of Mines,

OFFICE IN GROESBECK'S BLOCK, Salt Lake City, Utah.

We have arrangements made for placing Utah Mines upon the markets in England, France and Germany, and many points in the United States.

Mining and other Companies incorporated under the Laws of Utah.

Abstracts of Titles to mining and other property made in the most complete form. Mining Property Examined and Reported on.

DEEDS ACKNOWLEDGED, CONVEYANCING.

Applications for Patents, Mining Deeds, Agreements and Bonds for Deeds, Mortgages, Powers of Attorney, Leases, Contracts and other instruments of writing drawn up with Accuracy and Dispatch. **Maps, Plats and Diagrams** of mines furnished on short notice. A UNITED STATES COMMISSIONER always in attendance to acknowledge Deeds.

SPICER & CO.

H. DINWOODEY,

WHOLESALE AND RETAIL DEALER IN

Furniture & Bedding,

SPRING MATTRESSES, &c..

Nos. 31 East Temple, and 75 1st South Streets.

SALT LAKE CITY.

DELMONICO

Restaurant & Oyster Rooms

85 First South St., Salt Lake City.

LADIES' DINING HALL AND ICE CREAM PARLOR UP STAIRS.

OPEN DAY AND NIGHT.

Private Supper and Dinner Parties Supplied on short notice.

J. W. CLARK, Proprietor.